

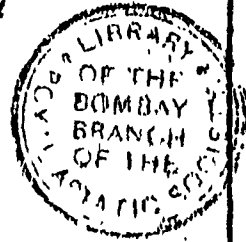


Public Works Department
Bombay Presidency

Irrigation Administration Report

Part I—Deccan and Gujarat

For the Year 1933-34



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DIAGRAM

SHOWING
EXPENDITURE ON IRRIGATION WORKS
IN THE PUBLIC WORKS DEPARTMENT
FROM
LOAN FUNDS, REVENUE & CONTRIBUTION

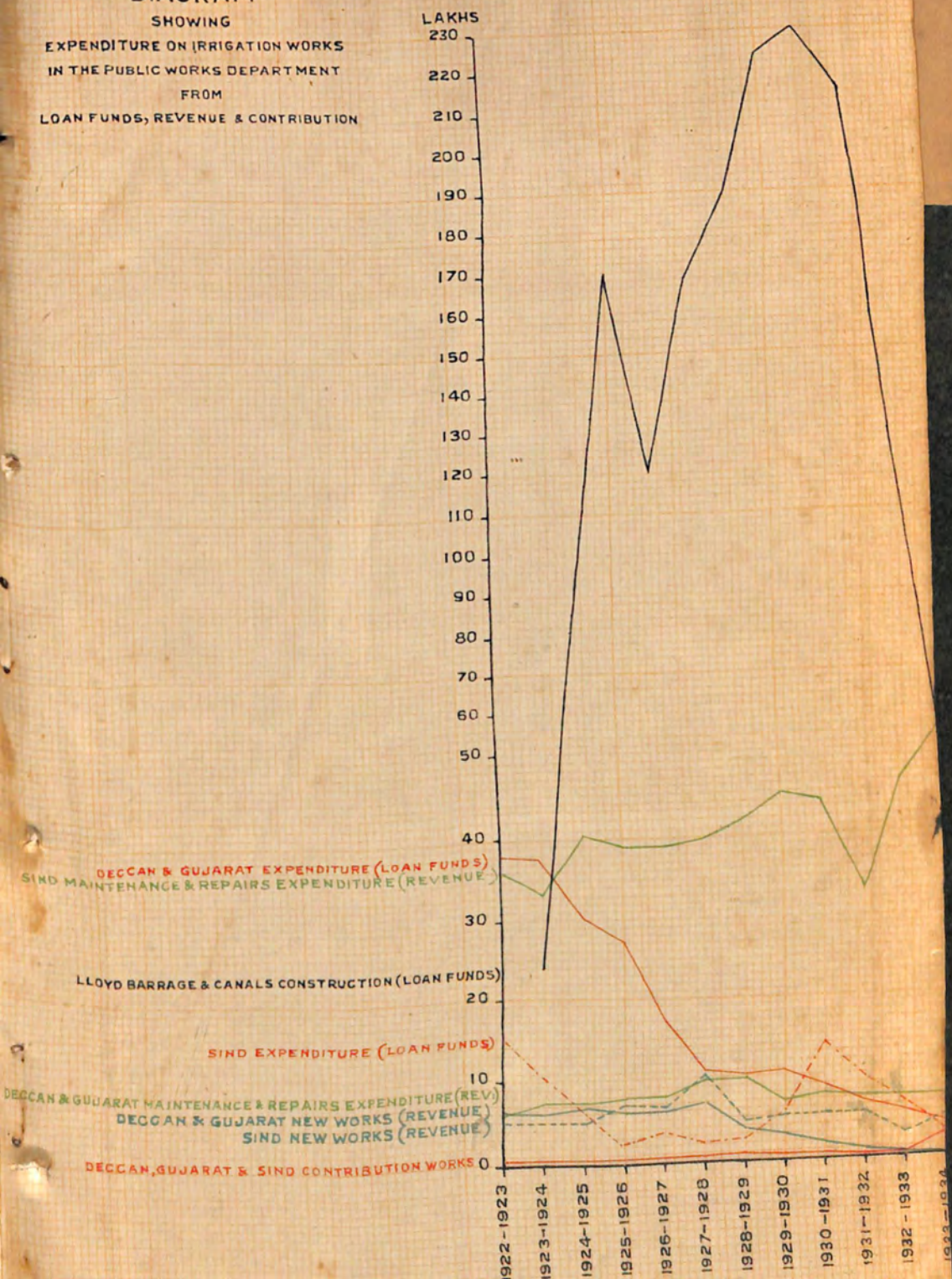
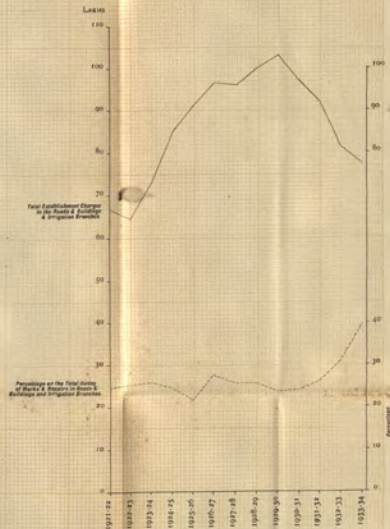
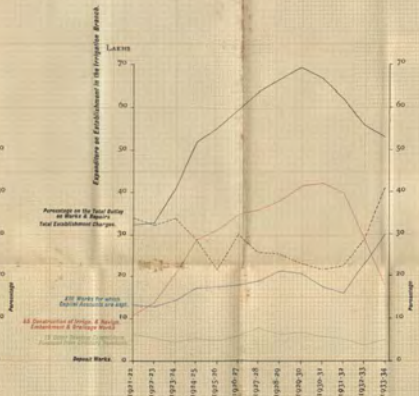
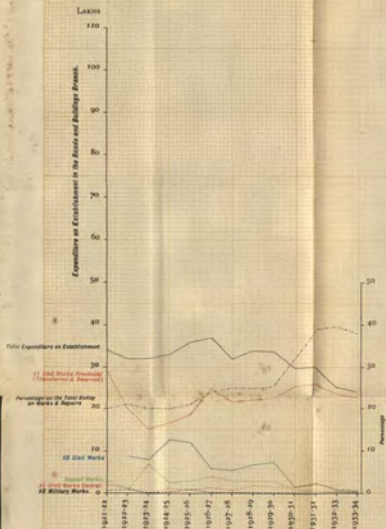


**DIAGRAM SHOWING EXPENDITURE
ON ESTABLISHMENT
IN THE
ROADS & BUILDINGS & IRRIGATION BRANCHES
OF THE
PUBLIC WORKS DEPARTMENT
AND
PERCENTAGES TO THE TOTAL OUTLAY ON WORKS AND REPAIRS**



Statement showing expenditure on establishment in the Roads and Buildings and the Irrigation Branches of the P. W. D. from the year 1921-22 to 1933-34 and percentage on the total outlay on works and repairs during that period in both the Branches.

Year.	Expenditure on Establishment in the Roads and Buildings Branch.							Expenditure on Establishment in the Irrigation Branch.
	41—Civil Works—Provincial (Transferred and Reserved).	60—Civil Works.	41—Civil Works—Central.	50—Military Works.	Deposit Works.	Total.	Percentage on the total outlay on works and repairs in the Roads and Buildings Branch.	55—Construction of Irrigation, Navigation, Embankment and Drainage Works.
1	2	3	4	5	6	7	8	9
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.		Rs.
1921-22 ..	29,06,955	..	1,98,683	45,258	2,84,992	34,35,888	19' 26	11,53,734
1922-23 ..	20,14,640	8,34,450	1,78,163	71,481	77,143	31,75,877	20' 79	14,20,751
1923-24 ..	15,84,488	8,10,645	67,892	38,560	6,88,354	31,89,939	19' 88	21,87,793
1924-25 ..	16,89,892	12,25,632	1,19,721	27,862	2,52,556	33,15,663	19' 67	29,10,785
1925-26 ..	18,89,417	12,05,078	1,01,876	69,049	2,58,535	35,23,955	20' 66	32,21,647
1926-27 ..	25,30,286	5,97,486	1,68,896	5,882	3,94,389	36,96,939	23' 76	35,56,959
1927-28 ..	21,99,448	5,59,107	1,49,132	5,042	2,97,270	32,09,999	24' 96	36,98,956
1928-29 ..	22,40,393	6,56,713	2,29,540	2,240	2,56,180	33,85,066	25' 03	39,04,670
1929-30 ..	22,45,450	7,33,867	1,56,773	3,638	2,34,897	33,74,625	25' 26	42,26,873
1930-31 ..	25,51,711	1,80,139	1,72,163	2,415	85,444	29,91,872	32' 35	42,88,966
1931-32 ..	25,93,104	2,32,929	1,22,799	3,182	44,132	29,96,146	38' 70	40,37,972
1932-33 ..	23,74,603	71,981	85,143	3,334	17,156	25,52,127	39' 79	28,70,427
1933-34 ..	22,73,945	31,807	71,866	3,810	30,502	24,11,930	37' 97	17,60,090

Year.	Expenditure on Establishment in the Irrigation Branch—contd.					Total Establishment charges in the Roads and Buildings and Irrigation Branches.	Percentage on the total outlay of works and repairs in Roads and Buildings and Irrigation Branches.
	XIII—Works for which capital accounts are kept.	15—Other Revenue Expenditure financed from Ordinary Revenues.	Deposit Works.	Total Establishment charges.	Percentage on the total outlay on works and repairs in the Irrigation Branch.		
1	10	11	12	13	14	15	16
	Rs.	Rs.	Rs.	Rs.		Rs.	
1921-22 ..	13,85,960	6,68,651	2,770	32,11,115	33' 59	66,47,003	24' 26
1922-23 ..	13,44,901	5,34,327	1,993	33,01,972	32' 22	64,77,849	25' 38
1923-24 ..	14,43,222	4,32,013	2,056	40,65,084	33' 89	72,55,023	25' 87
1924-25 ..	17,37,724	5,26,361	492	51,75,362	28' 73	84,91,025	24' 35
1925-26 ..	17,99,343	5,19,228	2,681	55,42,899	21' 62	90,66,854	21' 23
1926-27 ..	18,08,385	5,94,989	3,207	59,63,540	30' 56	96,60,479	27' 54
1927-28 ..	19,20,773	7,80,312	3,847	64,03,888	26' 00	96,13,887	25' 64
1928-29 ..	21,35,939	6,16,601	2,750	66,59,960	25' 51	1,00,45,026	25' 35
1929-30 ..	21,08,302	6,18,312	1,012	69,54,499	23' 26	1,03,29,124	23' 88
1930-31 ..	18,31,149	5,99,621	1,734	67,21,470	21' 60	97,13,342	24' 06
1931-32 ..	16,34,011	5,18,627	86	61,90,696	22' 40	91,86,842	25' 97
1932-33 ..	23,53,971	4,01,329	680	56,26,407	28' 54	81,78,624	31' 30
1933-34 ..	29,83,531	5,14,407	48,960	53,06,988	40' 41	77,18,918	39' 61

NOTE.—The percentage of the establishment charges on the cost of works and repairs in the Irrigation Branch (column 14) is generally higher than that in the Roads and Buildings Branch (column 8). The reason is largely that the establishment charges in the Irrigation Branch include the cost of Special Revenue Establishment employed entirely on "revenue management" work on certain canal systems in Sind and the Deccan which has no connection with the execution of works and repairs, and that these charges also include cost of part of the time of Irrigation establishment spent on revenue management including the control and distribution of water, which is debited in the accounts to "revenue management" and not to execution of works and repairs. If these establishment charges debited in the accounts to "revenue management" are deducted from the total cost of establishment in the Irrigation Branch the percentage on the cost of works and repairs will not be so divergent. The increase in the rate per cent. in the R. & B. Branch is mainly due to decrease in outlay on "works" and "repairs". Establishment charges cannot be reduced in the same ratio in which expenditure on works is reduced. A mere overall percentage on expenditure on work is inaccurate.

IRRIGATION ADMINISTRATION REPORT

PART I—DECCAN AND GUJARAT

1933-34

PHYSICAL FEATURES—GENERAL DESCRIPTION OF IRRIGATION.

Irrigation in the Deccan and Gujarat differs materially from that in Sind. Rainfall is available for agricultural operations but is often precarious. Tanks and canals provide irrigation for valuable crops such as sugarcane and also provide a source of supply to other crops when the rainfall is deficient or irregular. The old irrigation works consist chiefly of a few small canals and moderately large tanks, some 12,000 smaller tanks mostly in the southern part and in Gujarat, and of about 400 bandharas in Nasik and Khandesh Districts. The tanks have earthen dams and the larger ones irrigate areas up to 1,300 acres, and the smaller ones up to 500 acres, situated immediately below and in the vicinity of the dams. The chief crop irrigated is rice. The bandharas are masonry weirs built across rivers to head up the water to a level sufficient to irrigate lands on the banks of the streams by means of channels taking off from the flanks of the bandharas. The areas irrigated are up to 800 acres and the chief crops are sugarcane, wheat, bajri and gram. From these small beginnings have evolved the magnificent irrigation works which now form such a conspicuous feature in the Deccan and have so successfully fulfilled their beneficent purpose in banishing the famines which formerly devastated this portion of the Province.

2. The irrigation works in the Deccan are fundamentally different from those in Sind, the Punjab, Egypt or Mesopotamia, where wide alluvial plains have been formed by great deltaic rivers in perennial flow. The Bombay Deccan consists of a sloping table-land running eastward from the ridge of the Western Ghats. These form a ridge running parallel to the sea-coast at a distance from it of 50 to 100 miles; precipitous on the western side, they fall away more gradually to the east. The heaviest rainfall occurs on the peak of the ridge, where anything up to 270 inches of rain is recorded in the four monsoon months. The intensity of the rainfall rapidly decreases as we go eastward from the highest ridge, reaching a figure of 20 or 25 inches at a distance of 100 or 150 miles east of the Ghats. The rivers in the Deccan rise in the valleys close to the ridge, flow in an eastward direction, and are dry or practically so for 7 or 8 months of the year. The line of the Ghats, like the ridge of a roof, divides the rainfall into two parts; one the smaller portion falling westward into the Indian Ocean, and the other flowing through long lengths of tortuous rivers to the east and joining the rivers which reach the sea on

the south-eastern coast of the peninsula. These rivers are in flow during the monsoon months only, and if no artificial means of conserving their waters were provided, the whole monsoon rainfall would be wasted so far as the Bombay Deccan is concerned, and would simply flow away to the sea, benefiting but to a small extent the country traversed.

3. The large irrigation systems in the Deccan are all of the same type. Each depends upon a storage lake near the head of one of the river valleys, where sufficient water is collected during the monsoon to supply the country on either side of the river valley below. The water stored during the rains is let out during the dry months of the year in accordance with requirements ; and at a point on the river, which may be as far as 50 miles from the main storage lake, a ' pick-up-weir ' is constructed across the river-course to divert the water into canals which take off on either side of the weir. In one case only, that of Lake Fife at Khadakwasla near Poona, do the canals take off from the flanks of the dam itself. The canals are always constructed at a considerably flatter slope than that of the river, and consequently are able to diverge from the river itself on each side of the valley ; as a rule each canal only irrigates the area between itself and the river.

SECTION I

COMPRISING IRRIGATION WORKS FOR WHICH
CAPITAL AND REVENUE ACCOUNTS ARE KEPT.

GENERAL REMARKS.

Works in operation. 4. The following list includes all the works in operation (43 in number):—

Serial Number.	Name of Work.	Area of four months crops which could be irrigated in normal years with a duty at the head of the canal of 120 acres for the monsoon and 120 acres for the rabi season per cusec.	Whether supply is reliable or dependent on local rain.	Whether storage works completed or proposed.	Remarks.
		Acres.			
1	Hathmati and Khari Cut Canals.	24,000	Dependent on local rain.	No storage work. Bokh reservoir, Chandola tank and Wasai reservoir completed.	The catchment of the Hathmati river is hilly, covered partly with forest and that of Khari is undulating ground at its source and then plain ground with cultivated fields. Supply depends upon the flow in the rivers, and the contents of the Bokh reservoir, Chandola tank and Wasai reservoir.
2	Wangroli Tank ..	3,400	Do. ..	Completed ..	The catchment is ordinary plain ground and cultivated fields.
3	Savli Tank ..	3,000	Do. ..	Do. ..	Ordinary catchment on undulating ground.
4	Seiat Tank ..	2,000	Do. ..	Do. ..	Ordinary catchment on flat ground.
5	Tranza Tanks. Nagrama	800	Do. ..	Do. ..	The Tranza tank has no independent catchment. The Nagrama has a catchment of 1.5 sq. miles. Both are fed by the Matar drainage channel which is not reliable as it seldom flows.
6	Futelao Tank ..	800	Do. ..	Do. ..	Hilly catchment
7	Nira Left Bank Canal including Shetphal Tank.	100,000	Reliable ..	Lake Whiting (Lloyd Dam) completed.	Ghat catchment.
8	Nira Right Bank Canal.	180,000	Do. ..	Do. ..	Do.
9	Mhaswad Tank ..	14,000	Dependent on local rain.	Completed ..	Deccan catchment.
10	Mutha Canals including Matoba Tank.	49,080	Reliable ..	Lake Fife completed.	Ghat catchment.
11	Kasurdi Tank ..	40	Dependent on local rain.	Completed ..	Deccan catchment.
12	Shirsuphal Tank ..	1,150	Do. ..	Do. ..	Do.
13	Bhadalvadi Tank ..	1,225	Do. ..	Do. ..	Do.

Serial Number.	Name of Work.	Area of four months' crops which could be irrigated in normal years with a duty at the head of the canal of 120 acres for the monsoon and 120 acres for the rabi season per cusec.	Whether supply is reliable or dependent on local rain.	Whether storage works completed or proposed.	Remarks.
14	Godavari Right Bank Canal.	Acres. 44,000	} Reliable ..	Lake Beale completed.	Ghat catchment.
	Godavari Left Bank Canal.	26,000			
15	Girna Left Bank Canal.	9,000	Do. ..	Chankapur Tank completed.	Do.
16	Kadwa River Works. { Palkhed Canal. Ojhar Tambat Canal. Wadali Canal. }	7,689	Do. ..	Waghad Tank completed.	Do.
17	Parsul Tank ..	1,440	Dependent on local rain.	Completed ..	Deccan catchment.
18	Pravara Right Bank Canal.	18,480	} Reliable ..	Lake Arthur Hill (Wilson Dam) completed.	Ghat catchment.
	Pravara Left Bank Canal.	64,080			
19	Bhatodi Tank ..	1,461	Dependent on local rain.	Completed ..	Deccan catchment.
20	Ekrak Tank ..	13,070	Do. ..	Do. ..	Do.
21	Koregaon Tank ..	416	Do. ..	Do. ..	Hilly catchment.
22	Aashti Tank ..	3,382	Do. ..	Do. ..	Deccan catchment.
23	Pathri Tank ..	3,094	Do. ..	Do. ..	Hilly catchment.
24	Jamda Canals ..	42,000	Girna river supply not reliable.	Water is issued from the Chankapur Tank when available.	Ghat catchment for a small part and for the rest Deccan catchment.
25	Hartala Tank ..	978	Dependent on local rain.	Completed ..	Deccan catchment.
26	Mhaswa Tank ..	3,256	Do. ..	Do. ..	Do.
27	Shahada Channel ..	2,000	Reliable ..	No storage work ..	Hilly catchment. Supply is perennial.
28	Lower Panjhra River Works.	8,173	Panjhra river supply not reliable.	Mukti Tank completed.	Ghat catchment for one part and Deccan catchment for the rest.
29	Krishna Canal	6,412	Reliable ..	Proposed ..	Ghat catchment.
30	Rewari Canal ..	439	Dependent on local rain.	No storage work ..	Deccan catchment.
31	Upper Man River Works.	373	Do. ..	Pingli Tank completed.	Do.
32	Yerla River Irrigation Works.	1,182	Do. ..	Nehr Tank completed.	Do.
33	Chikhli Canal ..	358	Do. ..	No storage work	Do.

Serial Number.	Name of Work.	Area of four months' crops which could be irrigated in normal years with a duty at the head of the canal of 120 acres for the monsoon and 120 acres for the rabi season per cusec.	Whether supply is reliable or dependent on local rain.	Whether storage works completed or proposed.	Remarks.
		Acres.			
34	Maini Tank ..	455	Dependent on local rain.	Completed ..	Deccan catchment.
35	Gadikeri Tank ..	416	Do. ..	Do. ..	Do.
36	Golak Canal ..	17,627	Reliable ..	Do. ..	Ghat catchment.
37	Muchkundi Tank ..	750	Dependent on local rain.	Do. ..	Deccan catchment.
38	Dambal Tank ..	531	Do. ..	Do. ..	Do.
39	Medleri Tank ..	231	Do. ..	Do. ..	Do.
40	Madag Tank ..	1,418	Do. ..	Do. ..	Ghat and Forest catchment.
41	Asundi Tank ..	503	Do. ..	Do. ..	Deccan catchment.
42	Dharma Canal ..	For monsoon season 6,580 acres. For rabi nil.	Do. ..	No storage work. The canal takes off from the river itself.	Forest catchment.
43	Mavinkop Tank ..	617	Do. ..	Completed ..	Do.

Ekrak tank, Gadikeri tank, Mavinkop tank and Shahada channel are the only productive works and the rest are unproductive.

5. The interest account for the year was as follows :—

	Productive Works.	Unproductive Works.	Total.
	Rs.	Rs.	Rs.
Total interest charges during 1933-34 ..	46,580	42,79,992	43,26,572
Net revenue realised during 1933-34 ..	85,628	9,45,551	10,31,179

Net loss, i.e. difference between interest and net revenue—Rs. 32,95,393.

6. The financial results of the year by main heads were as under :—

	Area irrigated.	Revenue realised.			Working expenses.	Net revenue.
		Direct receipts.	Share of land revenue.	Total.		
	Acres.	Rs.	Rs.	Rs.	Rs.	Rs.
Productive ..	4,634	1,29,960	10,285	1,40,245	54,617	85,628
Unproductive ..	208,413	23,85,630	19,704	24,05,334	14,59,783	9,45,551
Total ..	*213,047	25,15,590	29,989	25,45,579	15,14,400	10,31,179

* Inclusive of 8,347 acres under consolidated assessment.

The gross revenue and the net revenue show decreases of Rs. 1,16,034 and Rs. 52,520 respectively, as compared with the figures for the previous year.

7. The figures of area irrigated, revenue assessed and realised and Area irrigated, revenue, working expenses, as compared with those of the previous three years, are given below :—

Year.				Area irrigated.*	Revenue.		Working expenses.
					Assessment.	Realisations.	
				Acres.	Rs.	Rs.	Rs.
1930-31	..	..	..	228,705	27,67,176	27,03,446	16,20,459
1931-32	..	..	..	207,151	24,22,599	18,81,119	15,35,282
1932-33	..	..	..	194,438	24,42,470	26,61,613	15,77,914
Average				210,098	25,44,082	24,15,393	15,77,885
1933-34	..	..	..	213,047	24,04,530	25,45,579	15,14,400

*Inclusive of the area under consolidated water and land assessment.

8. The gross area under command is 1,799,000 acres. The area irrigable at present is 8,38,000 acres.

9. The state of Revenue collections was as follows :—

Balance of demands unrealised at the commencement of the year				Rs.
..	..	..	..	24,61,623
Demands of the year—				Rs.
Rabi, 1932-33	..	..	..	2,96,227
Kharif, 1933-34	..	..	..	16,04,878
Miscellaneous receipts	..	..	..	4,06,019
				23,07,124
Total				47,68,747
Deduct—				
Remissions	..	..	..	6,318
Net total				47,62,429
Amount unrealised at the close of the year				22,38,027
				Rs.
Actual receipts of the year	..	..	..	25,24,402
Add—				
Share of land revenue	..	..	..	29,989
				25,54,391
Deduct—				
Refunds of revenue	..	..	..	8,812
Revenue realised				25,45,579

The remissions and refunds together amounted to Rs. 15,130. Unrealised irrigation revenue at the close of the year amounted to Rs. 22,38,027 which is made up as follows :—

				Rs.
Ekrak Tank	..	..	..	12,145
Hathmati and Khari Cut Canals	..	..	..	1,04,511
Bhadalwadi Tank	..	..	..	7,276
Krishna Canal	..	..	..	1,10,125
Ashhti Tank	..	..	..	20,807
Mutha Canals and Matoba Tank	..	..	..	2,38,848
Gokak Canal	..	..	..	26,107
Mhaswad Tank	..	..	..	36,946
Nira Left Bank Canal and Shetphal Tank ..	..	..	..	4,60,963
Kadwa River Works	..	..	..	53,251
Savli Tank	..	..	..	3,755
Chankapur Tank—Girna Left Bank Canal ..	..	..	..	39,225
Godavari Canals	..	..	..	2,54,122
Nira Right Bank Canal	..	..	..	3,97,774
Pravara River Works	..	..	..	4,28,470
Other Works	..	..	..	43,702
Total ..				22,38,027

10. The working expenses of the year amounted to Rs. 15,14,400 compared with Rs. 15,77,914 during the previous year. The following table compares the charges under the principal heads with those of the previous three years :—

	1930-31.	1931-32.	1932-33.	1933-34.
	Rs.	Rs.	Rs.	Rs.
Works	43,302	11,619	11,124	23,069
Repairs	5,24,613	5,31,321	5,31,747	5,38,258
Establishment	9,79,960	9,38,363	9,64,429	8,84,686
Tools and Plant	9,799	8,567	10,023	8,019
Total in the Public Works Department ..	15,57,674	14,89,870	15,17,323	14,54,032
Collection charges	57,111	39,988	55,172	54,762
Indirect charges	5,674	5,424	5,419	5,606
Total working expenses ..	16,20,459	15,35,282	15,77,914	15,14,400

Details of working expenses.

11. The following table gives the details of working expenses for some of the principal works :—

Name of work.	Average incidence of water rate per acre.	Cost of measurement.		Working expenses in the P. W. Department.	
		Total cost.	Per acre.	Per mile of main canal.	Per acre irrigated.
	Rs.	Rs.	Rs. a. p.	Rs.	Rs.
Nira Left Bank Canal and Shetphal Tank	10.43	1,390	0 0 5	1,527	3.04
Pravara Canals	15.42	532	0 0 7	2,020	9.97
Girna Left Bank Canal	9.93	522	0 1 6	2,864	9.11
Godavari Canals	14.41	240	0 0 7	2,045	17.70
Mutha Canals and Matoba Tank	14.66	470	0 0 8	1,414	11.39
Kadwa River Works	8.30	122	0 0 5	1,164	7.04
Mhaswad Tank	4.70	150	0 0 6	222	3.61
Nira Right Bank Canal	5.98	686	0 0 3	1,788	8.61
Krishna Canal	17.51	565	0 2 5	367	5.44
Yerla River Irrigation Works	5.11	165	0 0 9	287	2.65
Upper Man River Works	4.51	89	0 1 2	319	4.83
Jamda Canals	5.10	36	0 0 4	361	7.60
Ekrak Tank	5.21	247	0 2 7	901	15.22
Ashti Tank	4.43	172	0 1 0	1,743	13.73
Maini Tank	4.05	103	0 1 0	479	2.68
Gokak Canal	6.06	483	0 1 1	201	1.68
Dharma Canal	5.68	201	0 7 2	157	0.75

12. The gross assessed revenue, direct and indirect, amounted to Rs. 24,04,530 compared with Rs. 24,42,470 of the previous year. The details of the gross assessment are as under :—

	Direct revenue.			Indirect revenue.	Total.
	Water rates.	Other receipts.	Total.		
	Rs.	Rs.	Rs.	Rs.	Rs.
Productive	16,746	1,08,031	1,24,777	10,285	1,35,062
Unproductive	19,52,077	2,97,988	22,50,065	19,403	22,69,468
Total	19,68,823	4,06,019	23,74,842	29,688	24,04,530

The net assessed revenue of the year, after deducting working expenses (Rs. 15,14,400) amounted to Rs. 8,90,130 compared with Rs. 8,64,556 during the previous year.

13. The following table gives the percentage return earned during the year on capital outlay on the principal works in operation :—

Name of work.	Total capital outlay (direct and indirect).	Gross receipts (direct and indirect).	Working expenses (direct and indirect).	Net revenue.	Percentage return on capital outlay.
	Rs.	Rs.	Rs.	Rs.	Rs.
Ekrak Tank	13,40,386	1,28,471	43,290	85,181	6.35
Hathmati and Khari Cut Canals ..	13,18,729	64,586	37,904	26,682	2.02
Nira Left Bank Canal and Shetphal Tank.	1,35,82,088*	7,05,123	1,78,026	5,27,097	3.88
Nira Right Bank Canal ..	4,10,17,523	90,779	2,96,552	—2,05,773	..
Mhaswad Tank	20,96,016	36,784	15,541	21,243	1.01
Mutha Canals and Matoba Tank ..	69,30,592	3,98,103	1,29,396	2,68,707	3.88
Godavari Canals	1,04,80,240	3,98,619	2,97,083	1,01,536	0.97
Chankapur Tank—Girna Left Bank Canal.	20,56,431	62,637	55,857	6,780	0.33
Kadwa River Works	10,35,876	24,082	28,458	—4,386	..
Pravara River Works	1,50,07,954	3,19,218	2,39,254	79,964	0.53
Lower Panjhra River Works ..	4,68,621	23,951	4,018	19,933	4.25
Krishna Canal	9,49,807	60,567	23,463	37,104	3.90
Gokak Canal	14,66,673	59,126	11,648	47,478	3.24

* Inclusive of proportionate expenditure on the old Bhatgar Dam and the new Lloyd Dam.

14. The average water rates per acre of land actually irrigated were :—

	Rs.
Productive works	5.37
Unproductive works	9.68

15. The water rate assessments and other receipts compare with those of the previous year as under :—

	1932-33.	1933-34.
	Rs.	Rs.
Water rates	20,16,948	19,68,823
Other receipts—		
Plantations	9,109	11,326
Water power	14,453	14,313
Miscellaneous	3,75,381	3,80,380
Total	3,98,943	4,06,019
Share of land revenue	26,579	29,688
Grand Total	24,42,470	24,04,530

16. The principal crop acreages irrigated during 1932-33 and 1933-34 are given below :—

		1932-33.	1933-34.
		Acres.	Acres.
Gardens and orchards	..	5,218	4,708
Sugarcane	..	34,149	36,296
Wheat	..	13,630	11,287
Rice	..	9,485	16,263
Jowar	..	29,925	35,380
Bajri	..	8,303	7,762
Gram, etc.	..	9,183	8,765
Groundnut	..	12,288	14,977
Cotton	..	16,429	19,880
Condiments	..	7,617	7,046

The total estimated value of the crops irrigated was Rs. 119·88 lakhs against Rs. 130·85 lakhs during the previous year.

17. The following table shows the total number of ordinary wells in actual use, total area irrigated by them, etc., in the Deccan and Gujarat :—

Total number of ordinary wells in actual use.	Total area irrigated by wells shown in column 1 during 1933-34.	Total number of wells in working order but not used.	Total number of abandoned wells.
1	2	3	4
	Acres.		
303,104	649,177	52,599	53,077

DETAILED REPORTS BY LOCAL OFFICERS.

NORTHERN CIRCLE.

The year under review was characterized by the occurrence of a good monsoon which broke about the third week of June and ended by the middle of September. The rainfall though copious was not well distributed ; but it was favourable both for storage purposes and for irrigation in the Kharif and Rabi seasons and to a lesser extent in the hot season. The whole area transplanted with rice under the Hathmati and Khari Cut Canals was protected and the crops brought to maturity by the water of the Hathmati river and that from the storage of the Bokh Reservoir and other tanks situated thereunder.

The rainfall gauged at Ahmedabad and at Prantij was 49·73 and 54·33 inches, respectively, as compared with 37·59 and 29·99 inches, respectively, the average precipitation of the last three years. At Bareja, which is situated in the centre of the area irrigated by the Khari Cut Canal, the rainfall was 39·93 inches as compared with 27·12 inches, the average of

the last three years, while at Himatnagar, where the Head works of the Hathmati Canal are situated, it was 40·70 inches against 30·92 inches, the average of the last three years.

The principal irrigation works in operation in this Circle are (1) Hathmati and Khari Cut Canals, (2) Wangroli Tank, (3) Savli Tank, (4) Saiat Tank, (5) Tranza Nagrama Tanks and (6) Futelao Tank.

[No. (1) is a work which does not include any arrangement for storage and thus these canals depend solely on rainfall for their water supply.]

The six works are financially unproductive, the annual revenue derived therefrom being generally insufficient to cover their working expenses.

AHMEDABAD AND KAIRA AND PANCH MAHALS DIVISIONS.

HATHMATI AND KHARI CUT CANALS.

This is the most important canal system in Gujarat. The Hathmati Canal irrigates a tract of land lying between the Sabarmati and Khari rivers, and this system, in addition to irrigating the area dependent on it, is designed to pass surplus water, when available, partly into the Bokh Reservoir and partly into the Khari river. The Bokh Reservoir does not provide any direct irrigational supplies but only acts as a storage work for the Khari Cut Canal. Further downstream on the Khari are situated two small irrigation systems and these utilise the natural flow of the river and also any surplus water which can be made available from the Hathmati Canal; the Khari water is abstracted at the so-called "Khari Sluices" for direct irrigational purposes, while the surplus water from the Hathmati is diverted through an artificial Cut, called the Khari Cut, into a natural channel and this in its turn supplies a system of distributaries, several small tanks, and the large Chandola tank near Ahmedabad. The system was first opened in 1873-1874 and has cost more than Rs. 13 lakhs.

The Hathmati river had a copious flow during the whole Kharif season. The greatest depth of water over the weir crest was 2'40 feet on 29th August 1933 with a corresponding discharge of 15,497 cusecs. Out of 178 cusecs of the average daily discharge admitted into the canal at its head during the Kharif season, only 59 cusecs were utilised for irrigation under this canal, the balance being let down into the Bokh Reservoir and the Bhujwa Channel for supplying irrigation under the Khari Cut Canal. During the Rabi season an average daily discharge of 151 cusecs was obtained from the river out of which 16 cusecs were utilised in replenishing the Bokh Reservoir and the remaining 135 cusecs were utilised for irrigational purposes. Under the Hathmati Canal, 936 acres were irrigated in the Kharif season and 3,136 acres in the Rabi season.

The Khari river at Raipur commenced to flow with effect from 21st June 1933 and was in flood seven times during the months of June, August and September. The maximum depth of flood was 12'60 feet which occurred on 24th June 1933 giving a discharge of 7,569 cusecs. Under the Khari Cut Canal 10,953 acres were irrigated in the Kharif season and 658 acres in the Rabi season.

The areas irrigated, revenue assessed, and the working expenses in connection with the Hathmati and Khari Cut Canals compare with the average of the three preceding years as under :—

			Kharif.		Rabi.		Total.		Working expenses.
			Area irrigated.	Assessment.	Area irrigated.	Assessment.	Area irrigated.	Assessment.	
			Acres.	Rs.	Acres.	Rs.	Acres.	Rs.	
Average	..	..	8,039	39,617	1,853	5,394	9,892	45,011	35,890
1933-34	..	..	11,889	73,760	3,794	11,356	15,683	85,116	37,904

The remissions sanctioned during the year amounted to Rs. 1,060. The gross revenue realised from all sources amounted to Rs. 64,195 while the working expenses were Rs. 37,904, and these figures show a gross return of 1·99 per cent. on the total capital outlay. If the interest charges for the year amounting to Rs. 41,410 are taken into account the result shows a loss amounting to Rs. 15,119.

The construction of the Lambha Branch of the Khari Cut Canal was in progress during the year, and a sum of Rs. 1,507 was spent in completing the earth work and some of the masonry works. The total expenditure to date, including the amount spent during the year, amounts to Rs. 2,507 against Rs. 3,682 which is the estimated cost of the work.

FIRST CLASS IRRIGATION TANKS IN GUJARAT.

The five first class tanks mentioned below were constructed between the years 1904 and 1917 at an aggregate cost of Rs. 11 lakhs. They rarely yield any net return as the demand for water from them is small in years of good rainfall, while in years of scarcity the tanks themselves store deficient supplies. The Futelao Tank is in the Broach and Panch Mahals Collectorate, while the other works are in the Kaira Collectorate.

The areas irrigated, revenue assessed and the working expenses in connection with the tanks during the year are compared with the average of the previous three years below :—

Name of tank.	Year.		Kharif.		Rabi.		Total.		Working expenses.
			Area irrigated.	Assessment.	Area irrigated.	Assessment.	Area irrigated.	Assessment.	
			3	4	5	6	7	8	
1	2		Acres.	Rs.	Acres.	Rs.	Acres.	Rs.	Rs.
Wangroli..	Average	..	1,625	7,944	166	693	1,791	8,637	7,563
	1933-34	..	726	3,569	389	1,528	1,115	5,097	7,237
Savli ..	Average	..	1,967	10,025	1	6	1,968	10,031	6,278
	1933-34	..	1,291	6,547	4	13	1,295	6,560	6,342
Soiat ..	Average	..	627	2,521	35	137	662	2,658	4,431
	1933-34	..	172	690	174	692	346	1,383	4,674
Tranza Nagrama ..	Average	..	6	22	1	2	7	24	2,156
	1933-34	..	77	252	11	45	88	297	2,280
Futelao ..	Average	..	1	1	54	177	55	178	1,420
	1933-34	..	26	211	55	166	81	377	1,349

WANGROLI TANK.

The rainfall gauged at the site of the tank was 65·04 inches. The tank nearly filled during the year under report and the water was utilised in irrigating Kharif and Rabi crops (mainly rice, wheat and gram). The miscellaneous revenue realised during the year amounted to Rs. 1,067 compared with Rs. 1,512 received during the previous year.

SAVLI TANK.

The rainfall gauged at the site of the tank during the year was 43·75 inches. The tank filled during the year the water being utilised only in irrigating the Kharif crops which were mainly rice. Rabi irrigation was scanty. The miscellaneous revenue realised during the year was Rs. 1,116 compared with Rs. 1,499 received during the previous year.

SAIAT TANK.

The rainfall gauged at the site of the tank was 45·03 inches. The tank filled to its F. S. L. and the water was used for irrigating both Kharif and Rabi crops these being mainly rice, wheat and gram. The miscellaneous revenue realised amounted to Rs. 724 against Rs. 810 received in the previous year.

TRANZA NAGRAMA TANKS.

The rainfall gauged at Nagrama was 55·25 inches and it was approximately the same at Tranza. The tanks were partially filled during the year. The water was utilised in irrigating the Kharif rice crops and the Rabi crops of gram and wheat. The miscellaneous revenue realised amounted to Rs. 538 against Rs. 2,860 received in the previous year.

FUTELAO TANK.

The rainfall gauged at the site of the tank was 40·35 inches, and the storage filled during the year. The demand for water was not very keen as the rains received in the neighbourhood of the tank were adequate. There was, therefore, no Kharif irrigation under this tank but water was given for Rabi crops which, however, were not extensive in area. There was hot weather irrigation under this tank as the result of the use of surplus water remaining from last year. The miscellaneous revenue realised during the year was Rs. 42 against Rs. 127 obtained during the previous year.

The percentage returns obtained during the year from the working of these tanks are shown below :—

Name of tank.	Gross assess- ment.	Gross realisa- tions.	Working expenses.	Net revenue.	Capital outlay direct and indirect to end of 1933-34.	Percentage return.
	Rs.	Rs.	Rs	Rs.	Rs.	
Wangroli	6,164	6,215	7,237	—1,022	2,93,295	—0·34
Savli	7,676	14,426	6,342	8,084	2,55,210	3·17
Saiat	2,106	2,292	4,674	—2,382	1,84,029	—1·29
Tranza Nagrama ..	835	739	2,280	—1,541	2,80,635	—0·55
Futelao	419	70	1,349	—1,279	1,16,461	—1·09

DECCAN IRRIGATION CIRCLE.

Pre-monsoon showers were received in the Nira, Godavari and Pravara Canals tracts in the month of May and were useful for preliminary tillage. In the beginning of June a few showers also fell but the monsoon proper did not commence till the last week of June. Heavy rain fell in the months of August and September in the Canal tracts, which delayed rabi sowings until the month of October. The growth of Kharif crops such as cotton, bajri and ground-nut was not satisfactory due to the heavy rains in the earlier part of the monsoon; but sugarcane benefited. The rainfall was heavy in the Pravara Canals area but normal and satisfactory in the Nira Left Bank Canal, Mutha Canals, Girna and Kadwa Canals tracts.

The general slump in prices continued almost throughout the year under report; but there was a marked improvement in the "Gul" rates at the end of the year. The following six Sugar Companies have been started in addition to the Belapur Company which set up on the Pravara Canal 15 years ago :—

	Capacity in tons per day.
(1) The Maharashtra Sugar Mills Ltd. near Belapur, Pravara Left Bank Canal	250
(2) Messrs. Marsland Price and Company Limited at Kalamb, Nira Left Bank Canal	250
(3) The Phaltan Sugar Works Ltd., near Tadavali, Nira Right Bank Canal	500
(4) The Saswad Mali Sugar Factory Ltd., near Akluj Nira Right Bank Canal	250
(5) The Ravalgaon Sugar Farm Ltd., near Malegaon Girna Left Bank Canal	250
(6) Belwandi Sugar Farm, near Visapur-Visapur Canal.	100

The total area irrigated in this Circle during the year was 1,55,741 acres against 1,45,716 acres during the previous year, while the gross revenue amounted to Rs. 18.52 lakhs against Rs. 19.50 lakhs of the last year.

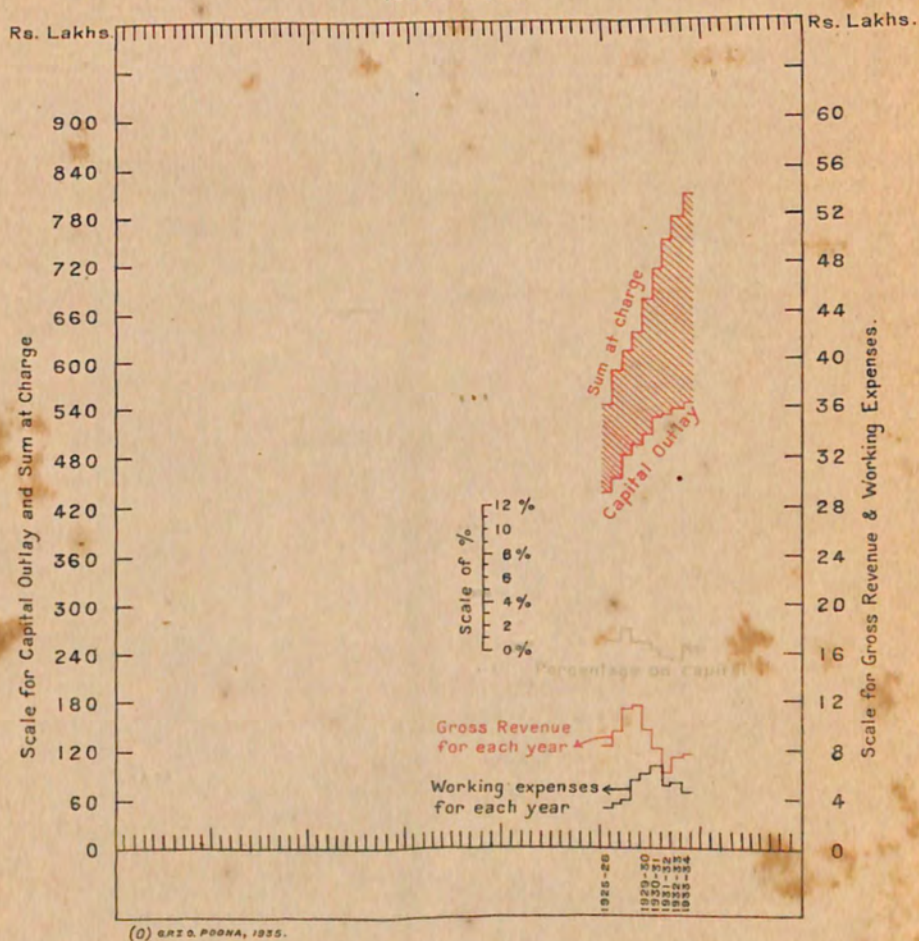
NIRA RIGHT BANK CANAL DIVISION.

LLOYD DAM AT BHATGHAR AND NIRA RIGHT BANK CANAL.

The Nira Right Bank Canal is the largest Canal in the Deccan. The original estimate of the project framed in 1910 provided for—

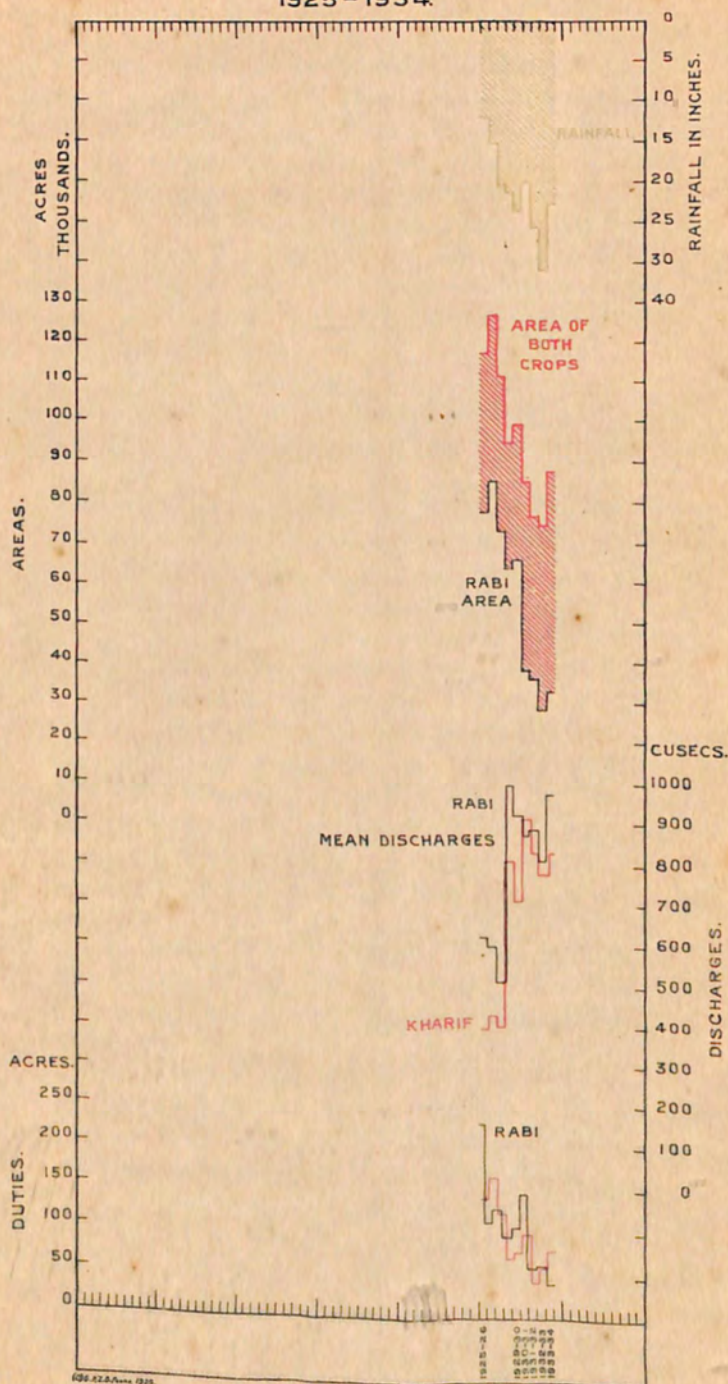
- (1) Raising the Dam at Bhatghar by 60 feet so as to increase its storage capacity from 5,300 million cubic feet to 24,000 million cubic feet;
- (2) A canal 109 miles long on the right bank of the Nira river having a capacity of 1,500 cusecs at head; and

FINANCIAL RECORD FOR Nira Right & Left Bank Canals. 1925-1934.



Sd/- E. P. LITTLE.
Executive Engineer,
Nira R. B. Canal Division.

WORKING RECORD FOR NIRA RIGHT & LEFT BANK CANALS 1925 - 1934.



So/- E. P. LITTLE.
EXECUTIVE ENGINEER,
NIRA R. B. CANAL DIVISION.

(3) Enlarging the existing Nira Left Bank Canal in order to increase its discharge from 450 to 760 cusecs. The total cost was estimated at about 258 lakhs and the area of various kinds of crops to be irrigated annually at 190,000 acres. The project was submitted to the Government of India in May 1911, was sanctioned by the Secretary of State in June 1912 and the work was started in the same year. Before undertaking the raising of the Bhatghar Dam, the scheme was thoroughly investigated with the result that it was decided, on technical grounds, to abandon the original design for raising the Dam and to construct an entirely new structure in place of the old dam. Owing to this change, and to the unprecedented rise in the cost of labour and materials, which took place from about the year 1916 in consequence of the great war, a revised estimate amounting to Rs. 491 lakhs was framed in 1920 and submitted to the Government of India in September 1921. The revised project provided for :—

(1) A new Dam at Bhatghar to increase the storage from 5,300 million cubic feet to 24,000 million cubic feet,

(2) A Canal on the right bank of the Nira river 106½ miles long, and

(3) Enlarging the Nira left Bank Canal, including the expenditure of Rs. 3½ lakhs already incurred on widening the Nira Left Bank Canal.

It was anticipated that 132,000 acres would be irrigated annually as a result of this scheme and that the gross revenue would thus amount to Rs. 15·22 lakhs and the net revenue to Rs. 11·92 lakhs giving a return of 2·4 per cent. on the capital outlay. The revised project was sanctioned by the Secretary of State in June 1922.

The Lloyd Dam at Bhatghar, 190 feet high, 5,333 feet long including the waste weir (4,266 feet long excluding the waste weir) and 124 feet wide at the base, was completed in 1928 at a cost of Rs. 172 lakhs. It is one of the largest Dams in the world and contains 21½ million cubic feet of masonry. The lake formed by the construction of the Dam has a length of 17 miles at full supply level with a corresponding storage capacity of 24,000 million cubic feet. The catchment area is 128 square miles with an annual rainfall varying from 250 inches in the ghats to 40 inches at Bhatghar. In addition to the sluices required for releasing water for irrigation purposes there are 81 waste weir gates which control and regulate the flood level in the lake.

The construction work of the Nira Right Bank Canal was carried out by two Divisions viz. Mutha Canals and Malsiras in the preceeding year but during the year under report a new Nira Right Bank Canal Division was formed and the whole system of the Canal entrusted to it.

All the works on the main canal have been completed. The work on main lines of Branches I, II and III is mostly completed. The Distributaries of the main canal except a few in the tail portion are completed. Water was first supplied from the canal for rabi crops in 1924-25. The canal commands lands in the Satara District, Sholapur District and Phaltan State and it ends near Mahod in the Sholapur District, the total length being about 106½ miles. The designed discharges of the canal at head and at tail (take off of Branch No. III) are 1,500 and 414 cusecs

respectively, the corresponding full supply depths being 8 feet and 6·5 ft. respectively. The culturable area commanded is 448,000 acres of which 132,000 acres will be irrigated annually when full development is reached. The distribution system is constructed on up to date principles while the latest types of measuring devices are provided at distributary heads and at frequent intervals on the channels. The whole perennial area commanded by the canal has been carefully surveyed and soil classification maps were prepared from Revenue anna classification valuations into A, B and C categories for 16-11 annas, 10-6 annas and 5 annas and under respectively. Subsequently the soils were classified by the Special Irrigation Division according to their suitability for sugarcane irrigation, other perennial irrigation, rabi irrigation and monsoon irrigation and the channels were designed accordingly. During 1933 areas suitable for Sugar Factories were selected by the Irrigation Research Division and their demarcation as such sanctioned by Government.

On 1st April, the depth of the water in Lake Whiting (the lake formed by the construction of the Lloyd Dam) was 104·45 feet above the sill of the sluices, the corresponding contents being 10,922·87 million cubic feet. The lowest level of 87·70 was reached on 1st July, the corresponding contents being 6,435·67 million cubic feet. The lake filled to its full supply level of 143 feet on 22nd September and was maintained to that level till 25th September when the draw off for irrigation commenced. On 31st March, the water level was 96·30 feet above the sill of the sluices, the corresponding contents being 8,648·58 millions cubic feet. The run off from the catchment of the lake (128 square miles) amounted to 39,201 million cubic feet. The rainfall gauged at Bhatghar during the year was 43·87 while the rainfall in the canal tract averaged 22·16 inches.

The following tables gives the results of irrigation, revenue etc., during the year as compared with the average of the past three years :—

Area irrigated.		Water rates assessed.		Gross assessed revenue.	
1933-34.	Average.	1933-34.	Average.	1933-34.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
33,854	20,332	2,02,513	1,03,326	2,09,927	1,10,483

Working expenses.		Realisations.		Rainfall.	
1933-34.	Average.	1933-34.	Average.	1933-34.	Average.
Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
2,96,552	2,49,235	90,779	80,880	22·16	25·38

The area under sugarcane during the year was 2,289 acres as against 1,905 acres of the previous year and the area of two-seasonal blocks was

12,690 acres, as against 10,229 acres of the previous year. The area of perennial blocks sanctioned amounted to 3,777 acres as against 3,120 acres during the previous year. The remissions sanctioned during the year amounted to Rs. 6. The cost of the measuring establishment during the year was 3 pies per acre as against 9 pies during the previous year. The perennial section of the Nira Right Bank Canal extended up to mile 79.

MHASWAD TANK.

This irrigation tank is formed by an earthen dam built across the Man river, the dam being 9,000 feet long and 80 feet high at its highest point. The storage capacity is 2,602 million cubic feet and the tank supplies water for the irrigation of lands in the Sholapur District although it is situated on the eastern border of Satara district. The capacity of the tank is considerable but the supply is not reliable owing to the precarious nature of the rainfall in the catchment. The designed discharge of the Mhaswad Canals at head is 180·7 with a full supply depth of 4 feet. The Nira Right Bank Canal cuts across the Mhaswad Canal at Mile 15 and the old Mhaswad Canal has been remodelled as Branch III of the Nira Right Bank Canal to pass a discharge of 300 cusecs.

On 1st April, the level of the water in the tank was 18·60 feet above the sill, the corresponding contents being 1,741·40 million cubic feet. Replenishment started from 1st June and by the commencement of the rabi season, the level of the tank rose to its full supply level of 24 feet above the sill of the outlet, the contents being 2,601 million cubic feet; the waste weir began to overflow from 3rd October and consequently full rabi demands could be satisfied. On 31st March, the level of the tank was 18·80 feet, the corresponding contents being 1770·29 million cubic feet. The average rainfall in the catchment of the tank (480 square miles) was 17·95 inches and the run-off amounted to 8,821 million cubic feet. The average rainfall in the canal tract was 21·41 inches.

The following table shows the results of irrigation, revenue, etc., during the year as compared with the average of past 3 years :—

Area irrigated.		Water rates assessed.		Gross assessed revenue.	
1933-34.	Average.	1933-34.	Average.	1933-34.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
4,066	5,622	19,112	24,435	21,704	30,302

Working expenses.		Realisations.		Rainfall.	
1933-34.	Average.	1933-34.	Average.	1933-34.	Average.
Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
15,541	20,829	36,784	28,445	21·41	20·12

The area under sugar-cane on seasonal passes was 69 acres against 120 acres during the previous year. Refunds sanctioned during the year amounted to Rs. 2½. The cost of the measuring establishment during the year under report was 6 pies per acre against 3 pies during the previous year.

POONA IRRIGATION DIVISION.

NIRA LEFT BANK CANAL.

This canal which came into operation in 1885-86 is one of the pioneer irrigation works in the Deccan and protects a tract in the Poona District which has a very precarious rainfall. The original scheme consisted of :—

(a) A ghat-fed storage tank at Bhatghar (Lake Whiting) about 32 miles south of Poona on the Yelwandi river, impounding 5,300 million cubic feet of water ;

(b) A pick-up-weir at Vir on the Nira river about 17 miles downstream from Bhatghar ;

(c) A canal about 100 miles long irrigating about 80,000 acres annually ; and

(d) The Shetphal Tank at the tail of the canal with an effective capacity of 592 million cubic feet, for the purpose of storing a portion of the surplus monsoon discharge.

The original masonry dam, 127 feet high, has since been replaced by the higher Lloyd Dam mentioned above. The canal commands a gross area of 2,01,000 acres, while the area commanded by the Shetphal Tank is 23,500 acres. The canal originally had a capacity of 456 cusecs and is now being remodelled to carry a discharge of 720 cusecs.

NIRA VALLEY DEVELOPMENT PROJECT

This project was designed for the complete development of irrigation in the Nira Valley ; it provided for the widening and remodelling of the Nira Left Bank Canal in order that this canal could irrigate an additional area of 19,000 acres of various types of crops and the construction of a new dam at Vir designed to supplement the storage of 24,000 million cubic feet impounded by the Lloyd Dam at Bhatghar. The construction of the Vir Dam, estimated to cost about a crore of rupees, has, however, been abandoned, as it is considered that by economical distribution of the water available the storage at Bhatghar will be sufficient to meet all irrigation requirements of the Nira Valley, both on the old Nira Left Bank Canal and the new Right Bank Canal. The remodelling of the Nira Left Bank Canal which was started in 1925-26 has made considerable progress during the year under report. The work of remodelling the distributaries was in progress, the expenditure incurred during the year being Rs. 1,02,951. The remodelling is expected to be completed by the end of 1936-37.

The rainfall at Bhatghar during the year was 43·87 inches as compared with 44·10 inches the average rainfall during the past 32 years. The rainfall was satisfactory and timely. The supply of water was sufficient and full advantage of it was taken by allowing early sowing of cotton and ground-nut. The level of the water in Lake Whiting on 15th February 1933 was 118·25 feet above the sill of sluices as against 129·35 feet on

15th February 1932. The lowest depth of 63 feet was reached on 21st June 1933 (the corresponding contents being 2,177·79 million cubic feet) and was due to the level being deliberately reduced to enable painting and repairs to be carried out when the lake was low. The water in the Shetphal tank reached its lowest depth of 24·30 feet on 1st August, the corresponding contents being 211·68 million cubic feet and replenishment from the canal commenced from 2nd August.

The perennial section of the Nira Left Bank Canal extended up to mile 90 and that of Shetphal Tank up to outlet 22 of Shetphal channel.

The following table gives the results of irrigation, revenue, etc., during the year as compared with the average of previous 3 years :—

Area irrigated.		Water rates assessed.		Gross assessed revenue.	
1933-34.	Average.	1933-34.	Average.	1933-34.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
53,720	58,520	5,60,562	6,61,139	5,65,753	6,69,378

Working expenses.		Realisations.		Rainfall.	
1933-34.	Average.	1933-34.	Average.	1933-34.	Average.
Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
1,78,026	3,54,353	7,07,479	5,96,802	22·60	26·13

The area of sanctioned blocks during the year was 17,208 acres on the Nira Left Bank Canal and that on the Shetphal Tank was 1,968 acres as against 19,340 and 2,018 acres during the previous year, while the area under two-seasonal blocks on the Nira Left Bank Canal amounted to 15,676 acres and that on the Shetphal Tank to 679 acres against 16,192 and 985 acres during the previous year. The remissions granted on account of concessions of water rates to overlap of sugarcane amounted to Rs. 24,653-8-0 and ordinary remissions sanctioned during the year amounted to Rs. 2,169. The cost of the measuring establishment was 5 pies per acre against the same figure of the last year.

MUTHA CANALS.

This system came into operation in 1874-75. The canals were constructed at a cost of about Rs. 65½ lakhs including the cost of a large ghat-fed storage reservoir (Lake Fife) on the Mutha river at Khadakwasla about 12 miles from Poona. The dam, which is of masonry, is 107 feet high, spanning the valley of the Mutha. The system comprises two Canals, the Mutha Right Bank and Mutha Left Bank, 70 and 18 miles long respectively. The maximum designed discharges of the two canals at their heads are 412 and 38·5 cusecs respectively. Both the Canals

take off direct from the lake which has a storage capacity of 3,955 million cubic feet, of which 508 million cubic feet are reserved for the Poona water supply as a margin of safety in the event of replenishment coming in later than is normal. The Matoba Tank is a tail tank receiving its supply from the Right Bank Canal during the monsoon months. The Mutha Canals, particularly the Right Bank Canal, play a very important part in the welfare of Poona City and the surrounding country. The storage is partly utilised for drinking and domestic purposes in Poona and partly for irrigation. The Mutha Right Bank Canal supplies the Poona Cantonment and the City and Suburban Municipalities with drinking water, the demand for which has increased enormously in recent years. The balance left over for irrigation being insufficient to meet the full demand, the perennial limit of the Canal has had to be reduced to canal mile No. 23½ i.e. up to and including Distributary 9. The Mutha Left Bank Canal supplies water for irrigation as well as for domestic purposes to parts of Poona City and Kirkee where the Municipalities have not been able to extend their water supply. The supply available in Lake Fife is, however, insufficient to meet the increasing demands on it and a project has been prepared for increasing the storage and for the remodelling and extension of the Right Bank Canal.

On 1st April, the level of water in Lake Fife was 19·65 feet above the sill of sluices, the corresponding contents being 1,629 million cubic feet as against 21·80 feet and 1,875 million cubic feet respectively of the previous year. The lowest level of 11·40 feet was reached on 21st June when replenishment commenced and the Lake was overflowed on 26th June. The draw-off from the Lake commenced on 8th October when the water was at its full supply level of 34 feet, the corresponding contents being 3,643 million cubic feet. The run-off from the catchment of the lake (196 square miles) amounted to 59,618 million cubic feet. The rainfall at Khadakwasla during the year was 51·05 inches, and that in the canal tract 25·28 inches. On 1st April, the level of water in Matoba Tank was 13·02 feet, the corresponding contents being 29 million cubic feet. The tank dried on 18th April. Replenishment from the Mutha Right Bank Canal commenced on 28th June, and the full supply level of the Tank of 29 feet was reached on 11th September, the corresponding contents being 182·28 million cubic feet.

The following table gives the results of irrigation, revenue, etc., during the year as compared with the average of the past 3 years :—

Area irrigated.		Water rates assessed.		Gross assessed revenue.	
1933-34.	Average.	1933-34.	Average.	1933-34.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
10,927	13,170	1,60,148	1,95,085	3,08,357	3,67,306

Working expenses.		Realisations.		Rainfall.	
1933-34.	Average.	1933-34.	Average.	1933-34.	Average.
Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
1,29,396	96,000	3,98,030	3,84,905	23·32	23·34

The area of sugarcane under the Mutha Canals was 2,815 acres while that of two seasonal blocks amounted to 2,202 acres (Mutha Canals 857 *plus* Matoba Tank 1,345 acres). The quantity of water supplied to the Poona Cantonment and Poona City Municipality during the year was 998 million gallons and 2,426 million gallons respectively as against 1,114 and 2,998 million gallons in 1932-33; the revenue obtained therefrom being Rs. 39,913 and Rs. 1,08,842 respectively as compared to Rs. 44,563 and 1,19,901 in 1932-33 respectively. The cost of the measuring establishment amounted to 8 pies per acre as against 1 anna 4 pies of the previous year. The expenditure on the work of remodelling the first 11 miles of the Mutha Right Bank Canal amounted to Rs. 9,006 during the year. Remissions amounting to Rs. 150 were granted and there were no refunds during the year.

KASURDI TANK.

This tank, which remained empty from 27th January 1933, received replenishment on 21st June and dried up on 11th July. It received a second replenishment on 7th September and overflowed from 8th September to 25th October and again dried up on 8th January.

SHIRSUPHAL TANK.

On 1st April, the level of water in the tank was 25·40 feet the contents being 191·25 million cubic feet. The lowest level of water of 21·60 feet was reached on 3rd September. The water in the tank reached its highest level of 31·50 feet on 4th October, the contents then being 374 million cubic feet. On 31st March, the level of water in the tank was 25·40 feet, the contents then being 191·25 million cubic feet.

BHADALWADI TANK.

On 1st April, the level of the water in the tank was 29·15, the contents being 114 million cubic feet. The lowest level of 24·80 feet was reached on 3rd August, the contents then being 68·53 million cubic feet. The tank reached its highest level of 35·60 feet on 20th October, the contents being 199·36 million cubic feet. On 31st March, the level in the tank was 29·45 feet, the corresponding contents being 117·60 million cubic feet.

The subjoined table gives the results of irrigation, revenue, etc., during the year as compared with the average of the past 3 years :—

Name of tank.	Area irrigated.		Water rates assessed.		Gross assessed revenue.	
	1933-34.	Average.	1933-34.	Average.	1933-34.	Average.
	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
Kasurdi	57	53	290	166	1,635	1,185
Shirsuphal	1,045	1,053	6,319	5,247	6,352	5,718
Bhadalwadi	750	1,135	4,529	5,499	4,559	5,750

Name of tank.	Working expenses.		Realisations.		Rainfall.	
	1933-34.	Average.	1933-34.	Average.	1933-34.	Average.
	Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
Kasurdi	1,259	1,104	1,530	1,315	13.40	16.37
Shirsuphal	3,315	4,050	7,771	4,873	21.03	18.59
Bhadalwadi	3,119	4,427	7,568	7,051	18.59	20.90

NASIK IRRIGATION DIVISION.

GODAVARI CANALS.

This is one of the major irrigation works undertaken in the Deccan for the protection of areas liable to famine. It was started in 1907 and completed in 1915-16 at a cost of about 1 crore of rupees. The system comprises :—

(1) A storage reservoir (Lake Beale) on the Darna river, a tributary of the Godavari situated about 20 miles from Nasik ;

(2) A pick-up weir at Nandur-Madhmeshwar on the Godavari, 47 miles below the Darna Dam, which impounds the water let down from the dam and distributes it to the canals ; and

(3) Two canals, the Right Bank Canal, 69 miles long, which serves the northern tracts of the Ahmednagar District, and the Left Bank Canal, 48 miles long, which irrigates lands north of the Godavari Valley in the Nasik and Ahmednagar Districts.

The Darna Dam (inclusive of its waste weir) is over a mile long and has a maximum height of 92 feet above its lowest foundation level. The

lake has a storage capacity of 7,763 million cubic feet and the cost of the dam was Rs. 34·27 lakhs. The weir at Nandur-Madhmeshwar is a work of considerable magnitude, its length being 3,618 feet inclusive of the Right and Left Bank Canal regulators. It has a maximum height of 34 feet above the level of the river bed. Scouring sluices have been constructed close to the head regulators of the two canals with the object of keeping the approach channels to the latter clear of silt. The total area under command of the canals is 232,390 acres, of which some 80,000 acres are irrigable annually. The two canals (Right and Left) are designed to discharge 384 and 228 cusecs at their heads, with full supply depths of 7 feet and 6 feet respectively while the respective discharges at the tails of the canals are 114·41 cusecs and 35 cusecs with corresponding full supply depths of 5 feet and 3 feet.

On 1st April, the level of water in the Lake Beale was 67·10 feet above the sill of the sluices, the corresponding contents being 5,330 million cubic feet. The lowest level of 57·70 feet was reached on 22nd June, the contents then being 3,214 million cubic feet. Replenishment commenced when the water was at this level and the lake overflowed on 16th July. The draw off for irrigation commenced on 10th November and the level of the water gradually fell to 53 feet on 31st March, the contents then being 2,503 million cubic feet. The catchment area of the Lake Beale is 156 square miles of which 80 miles is a typical ghat catchment producing a very reliable supply. The average rainfall in the catchment area was 60·29 inches, while that in the canal tract was 28·63 inches on the Godavari Right Bank Canal and 31·04 inches on the Godavari Left Bank Canal. There were very high floods on the Godavari river due to excessive rain during the month of August and the flank embankment of the Godavari Left Bank Canal was washed away causing breaches in the 1st and 2nd miles of the canal and the water level in the weir rose to R.L. 541 as against 540 designed. Rainfall during the year was fairly good. Due to frost in January, garden crops, sugarcane and Rabi crops were damaged in the area of Godavari canals in the Nasik District, and relief is being given.

The following table gives the results of irrigation, revenue, etc., during the year as compared with the average of the past 3 years :—

Name of work.	Area irrigated.		Water rates assessed.		Gross assessed revenue.	
	1933-34.	Average.	1933-34.	Average.	1933-34.	Average.
	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
Lake Beale	452	470	1,616	1,743	2,59,834	3,39,116
Godavari Right Bank Canal	8,938	10,875	1,23,367	1,68,398		
Godavari Left Bank Canal.	7,362	8,122	1,12,460	1,32,750		

Name of work.	Working expenses.		Realisations.		Rainfall.	
	1933-34.	Average.	1933-34.	Average.	1933-34.	Average.
	Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
Lake Beale	2,97,083	2,70,348	3,98,609	3,01,932	..	..
Godavari Right Bank Canal					28·63	25·19
Godavari Left Bank Canal .					31·04	29·61

The area of perennial block sanctioned was 9,897 acres on the Godavari Canals as against 10,169 acres in the previous year. The perennial limit of the Godavari Right Bank Canal extends up to mile 60, while that of the Left Bank Canal extends up to mile 42. The cost of the measuring establishment was 7 pies per acre against 7 pies during the previous year. The remissions sanctioned during the year amounted to Rs. 253 and refunds to Rs. 203.

The preparation of the Waldevi Tank Project was taken in hand ; it is estimated to cost roughly Rs. 27,82,000 and is intended for the water supply to the Nasik Town, Deolali Cantonment, G.I.P. Railway, Government Central Jail, etc. and for some irrigation purposes.

CHANKAPUR TANK—GIRNA LEFT BANK CANAL.

This is a comparatively small irrigation system situated in the Nasik District having a storage reservoir at Chankapur together with the Girna Left Bank Canal which is 19 miles long. The tank is situated on the Girna river, a tributary of the Tapti, and has been formed by the construction of a masonry dam 140 feet high, which impounds 1,500 million cubic feet of water. The dam was completed in 1909-10. The total area under the command of the canal is 29,182 acres of which 8,500 will be irrigated annually when full development is reached. The designed discharge of the canal at its head is 90 cusecs and at its tail 15 cusecs, the full supply depths being 4½ feet and 2 feet respectively. The canal has been in operation since 1909-10, and an extension of the system which was completed in 1920-21 has been designed to carry about 40 cusecs.

On 1st April, the level of water in the tank was 74·30 feet, the corresponding contents being 740 million cubic feet. The lowest level reached was 19·13 feet on 15th July when replenishment commenced. The level gradually rose to 91·50 feet on 14th September, the contents then being 1,516 million cubic feet. The draw off for irrigation purposes commenced on 24th March. When the level of water was 83·80 feet, the corresponding contents being 1,098 million cubic feet. The level of water on 31st March was 83 feet, the contents then being

1,065 million cubic feet. The run-off from the catchment of the tank (100 square miles) was 15,803 million cubic feet, the average rainfall being 82·07 inches. The maximum flood occurred on 14th September. The rainfall was satisfactory. Some damage due to the cold waves, was, however, done to rabi crops and relief is given.

The following table shows the results of irrigation, revenue, etc., during the year as compared with the average of the past 3 years :—

Area irrigated.		Water rates assessed.		Gross assessed revenue.	
1933-34.	Average.	1933-34.	Average.	1933-34.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
5,973	5,119	59,321	38,079	60,223	66,819

Working expenses.		Realisations.		Rainfall.	
1933-34.	Average.	1933-34.	Average.	1933-34.	Average.
Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
55,857	63,406	62,637	30,579	33·60	23·60

The cost of the measuring establishment was 1 anna 6 pies per acre as against the same amount during the last year. Remissions and refunds due to damage done to crops will approximately amount to Rs. 520 and Rs. 3,415 respectively.

KADWA RIVER WORKS.

These works, which came into operation in 1868-69, consist of three small canals, viz., the Palkhed, Ojhar Tambat and Wadali, taking off from weirs constructed across the Kadwa river and its tributary the Banganga, and the system comprises 38 miles of canals and distributaries. The storage is at Waghada (a ghat-fed storage) situated on the Kolwan river in the Nasik District. The tank is remarkable for the size of its earthen dam which has a maximum height of 96 feet. The designed discharges of the Palkhed Canal at head and tail are 90 cusecs and 15 cusecs respectively, the corresponding depths at full supply being 4½ feet and 2 feet. The designed discharges of the Ojhar Tambat Canal at head and tail are 33 cusecs and 5 cusecs respectively, the depths at full supply being 3 feet and 1 foot respectively. The designed discharges of the Wadali Canal at head and tail are 19 cusecs and 5 cusecs respectively, the depths at full supply being 2 feet and 1 foot respectively.

On 1st April, the level of the water in the Waghad Tank was 36 feet, the corresponding contents being 299 million cubic feet. The level fell gradually and reached to 23·70 feet on 19th June, the corresponding contents being 118 million cubic feet. The tank was replenished on 19th June and the waste weir overflowed on 25th July. The draw off for irrigation purposes commenced on 6th December with a level of water of 47 feet representing a volume of 572 million cubic feet. The level gradually dropped to 37·95 feet on 15th March and it was 38·05 feet on 31st March, the contents then being 340 million cubic feet. The average rainfall in the catchment of Waghad Tank was 81·44 inches. The maximum flood occurred on 11th September. The rainfall received in the canal tracts was satisfactory.

The following table shows the results of irrigation, revenue, etc., during the year as compared with the average of the past 3 years :—

Name of Canal.	Area irrigated.		Water rates assessed.		Gross assessed revenue.	
	1933-34.	Average.	1933-34.	Average.	1933-34.	Average.
	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
Palkhed canal ..	1,992	1,739	16,093	16,281	34,452	66,501
Ojhar Tambat canal ..	980	967	8,276	10,616		
Wadali canal ..	985	880	8,487	9,152		

Name of Canal.	Working expenses.		Realisations.		Rainfall.	
	1933-34.	Average.	1933-34.	Average.	1933-34.	Average.
	Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
Palkhed canal ..	28,468	30,087	23,488	34,156	46·53	32·88
Ojhar Tambat canal ..					46·93	37·11
Wadali canal ..					30·85	26·88

The area under sugarcane and two seasonal blocks during the year were as follows :—

		Palkhed.	Ojhar Tambat.	Wadali.
		Acres.	Acres.	Acres.
Sugarcane ..	..	194	131	146
Two seasonals ..	..	1,069	495	311

During the month of January, Rabi and sugarcane crops were damaged owing to cold waves and relief is being given by granting remissions according to the damage done. The cost of the measuring establishment was 5 pies per acre against 7 pies during the previous year.

PARSUL TANK.

This small tank depends solely on local rains for its supply and generally stores sufficient water for monsoon and rabi crops only and has an earthen dam across the Parsul river. There was satisfactory rainfall during the year.

On 1st April, the level of water in the tank was 19'80 feet above the sill of outlet, the contents being 42'20 million cubic feet. The level fell to 12'30 feet on 17th June, the corresponding contents being 19'50, when replenishment commenced. The level rose gradually to full supply of 35 feet on 25th August, the corresponding contents being 119 million cubic feet. The first draw off for irrigation purposes commenced on 28th October. The level of water on 31st March was 19'60 feet and the corresponding contents were 41'46 million cubic feet.

The following table shows the results of irrigation, revenue, etc., during the year as compared with the average of the past 3 years :—

Area irrigated.		Water rates assessed.		Gross assessed revenue.	
1933-34.	Average.	1933-34.	Average.	1933-34.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
710	481	3,981	2,470	4,200	5,433

Working expenses.		Realisations.		Rainfall.	
1933-34.	Average.	1933-34.	Average.	1933-34.	Average.
Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
1,702	4,539	4,172	2,438	28'07	21'62

The cost of the measuring establishment was 1 anna 3 pies per acre as against the same amount during the previous year. Crops were damaged by cold waves and remissions are being sanctioned according to the damage done.

AHMEDNAGAR DIVISION.

PRAVARA RIVER WORKS.

This canal system, which was constructed at a cost of Rs. 1½ crores, comprises :—

- (1) The Wilson Dam at Bhandardara on the Pravara river, which is one of the highest dams in the world ;

(2) The pick-up-weir on the river at Ojhar, 53 miles below the dam, and

(3) Two canals, the Pravara Right Bank Canal, 33 miles, and the Pravara Left Bank Canal, 48 miles long, which take off from the river at the weir.

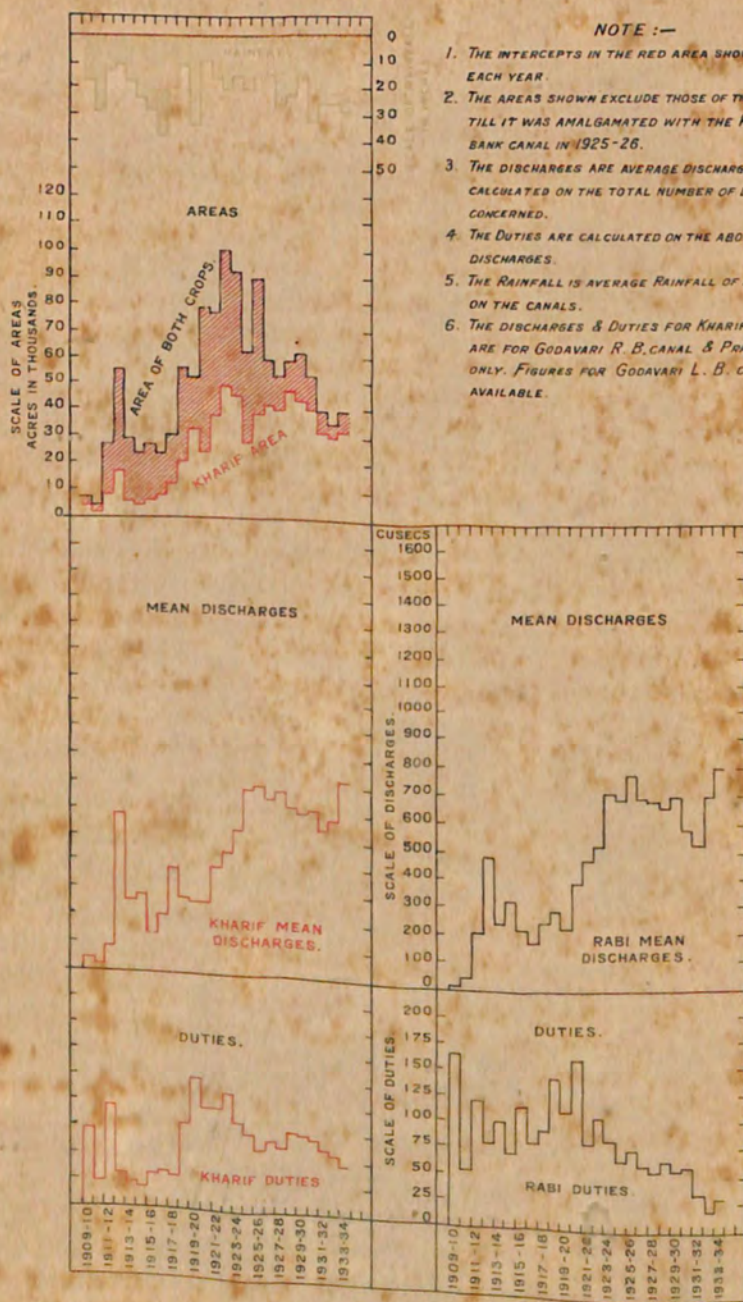
These canals irrigate lands in the Ahmednagar District and they command an area of 228,720 acres of which 52,000 acres will be irrigated annually when full development is reached. The designed discharges of the two canals (Pravara Right Bank Canal and Pravara Left Bank Canal) at head are 152·62 cusecs and 530 cusecs, respectively, the corresponding full supply depths being 5 feet and 8 feet, while the designed discharges at tail are 81·79 cusecs and 102 cusecs, respectively, with a full supply depth of 3 feet in each case. The first few miles of both canals have silted heavily and are infested with weeds, the cause in each case being the insufficient bed slope and consequently proposals for the remodelling of the first 10 miles of the Pravara Left Bank Canal are under consideration. The construction of the Wilson Dam, which impounds the water of Lake Arthur Hill, was commenced in 1911 and completed in 1926. The catchment area of the lake is 47 square miles ; it is situated in the Ghats and has an assured run-off. The dam, which is designed to impound a maximum depth of water of 270 feet, is about 1,600 feet long at the top and is constructed across a gorge in the valley of the Pravara River. At present water is impounded to a depth of 260 feet giving a storage of 10,086 million cubic feet; and this could be increased to 12,092 million cubic feet with a corresponding depth of 270 feet by the erection of automatic gates on the waste weir or by the construction of Siphon Spillways and the raising of the waste weir.

On 1st April, the level of water in Lake Arthur Hill was 223 feet above the sill of the lowest outlet, the corresponding contents being 5,053·88 million cubic feet. The lowest level of 183·35 feet was reached on 21st June, the contents then being 2,245·93 million cubic feet. Replenishment commenced from 22nd June and the full supply level of 260 feet was reached on 2nd August, the contents being 10,086 million cubic feet. The maximum flood occurred on 4th August when the level of water above the sill was 264·2 feet. The full supply level was maintained till 31st October and the draw off for irrigation purposes commenced from 1st November as against 6th November in the previous year. The level of the water gradually fell to 227·80 feet on 31st March, contents then being 5,550·17 million cubic feet. The yield from the catchment (47 square miles) of the lake was 36,561·39 million cubic feet while the average rainfall of several rain gauge stations was 160·24 inches. The rainfall in the catchment and in the canal tract was timely and well-distributed. Owing to the timely rains which were received in August and September and late rains in October there was a reduced demand for canal water for rabi irrigation.

**AHMEDNAGAR DIVISION
GODAVARI & PRAVARA CANALS
COMBINED WORKING RECORD.
FOR THE YEAR 1933-34.**

NOTE :—

1. The intercepts in the red area show the Rabi Areas each year.
2. The areas shown exclude those of the Lakh channel till it was amalgamated with the Pravara left bank canal in 1925-26.
3. The discharges are average discharges at head calculated on the total number of days of the season concerned.
4. The duties are calculated on the above areas and discharges.
5. The Rainfall is average Rainfall of all the stations on the canals.
6. The discharges & duties for Kharif & Rabi 1912-13 are for Godavari R. B. canal & Pravara canals only. Figures for Godavari L. B. canal are not available.

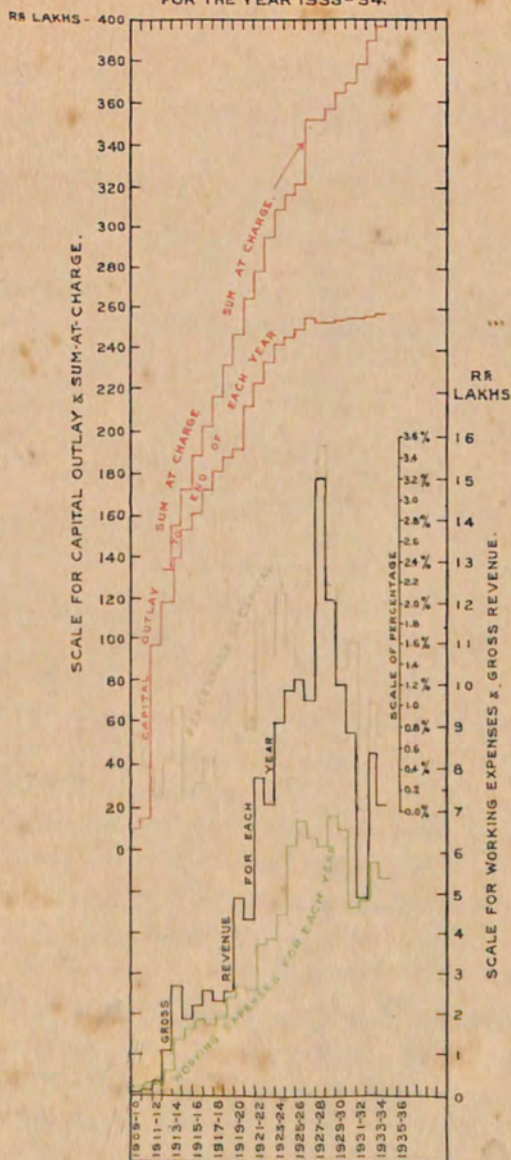


(O) G. P. Z. D. POONA, 1935.

Sd/ C. E. AITKEN

Executive Engineer,
Ahmednagar Division.

**AHMEDNAGAR DIVISION
GODAVARI & PRAVARA CANALS
COMBINED FINANCIAL RECORD.
FOR THE YEAR 1933-34.**



N.B.

THE INTERCEPT BETWEEN THE TWO RED LINES SHOWS
ARREARS OF INTEREST UNPAID UPTO END OF EACH YEAR,
WHICH BEING ADDED TO THE CAPITAL GIVE SUM AT CHARGE.
THE INTERCEPT BETWEEN THE GREEN & BLACK LINES
SHOWS THE NET INCOME EACH YEAR.

NAME OF CANAL	CONSTRUCTION COMMENCED IN.	CANAL WAS OPENED IN.
GODAVARI CANALS.	1907	1911-12
PRAVARA CANALS.	1909	1909-10

Sd/ C.E. AITKEN

EXECUTIVE ENGINEER.
AHMEDNAGAR DIVISION

The following table shows the results of irrigation, revenue, etc., during the year as compared with the average of the past 3 years :—

Name of work.	Area irrigated.		Water rates assessed.		Gross assessed revenue.	
	1933-34.	Average.	1933-34.	Average.	1933-34.	Average.
	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
Pravara Right Bank Canal.	5,675	6,281	74,783	82,313	3,70,171	4,74,919
Pravara Left Bank Canal.	17,624	17,974	2,94,271	3,13,141		

Name of work.	Working expenses.		Realisations.		Rainfall.	
	1933-34.	Average.	1933-34.	Average.	1933-34.	Average.
	Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
Pravara Right Bank Canal.	2,39,254	2,40,983	3,19,057	4,43,927	27·51	28·17
Pravara Left Bank Canal.					27·90	25·16

The refunds and remissions sanctioned during the year amounted to Rs. 49 and Rs. 626 respectively. The total area of perennial blocks was 9,090 acres, while the area of two-seasonal blocks was 1,462 acres. The cost of the measuring establishment was 7 pies per acre against 6 pies during the previous year.

BHATODI TANK.

This is a small tank situated on the Mehekri river about 12 miles from Ahmednagar. It depends entirely on local rains for its supply and this supply generally suffices for the monsoon and rabi crops. The tank has silted heavily and its storage capacity has consequently been reduced from 154 to 39 million cubic feet.

On 1st April, the level of water in the tank was 16·70 feet, the contents being 5·91 million cubic feet. The first replenishment was received on 2nd June, and the level of the water in the tank was raised to 22·45 feet, the corresponding contents being 39·76 million cubic feet. The highest level reached was 25 feet on 25th August and the waste weir overflowed to a depth of 2·5 feet. The level on 31st March was 20·25 feet, the contents then being 22·77 million cubic feet.

The following table gives the results of area irrigated, revenue, etc., for the year as compared with the average of the past 3 years :—

Area irrigated.		Water rates assessed.		Gross assessed revenue.	
1933-34.	Average.	1933-34.	Average.	1933-34.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
632	678	3,182	2,660	4,767	5,764

Working expenses.		Realisations.		Rainfall.	
1933-34.	Average.	1933-34.	Average.	1933-34.	Average.
Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
3,975	5,627	4,436	6,248	32·57	23·73

CENTRAL CIRCLE.

POONA DIVISION.

The area irrigated, gross assessed revenue and working expenses of the two works mentioned below, as compared with the average of the preceding three years, are given in the following statement :—

Name of work.	Area irrigated.		Gross assessed revenue.		Working expenses.	
	1933-34.	Average.	1933-34.	Average.	1933-34.	Average.
	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
Krishna Canal ..	4,311	4,981	76,246	81,409	23,463	21,195
Rewari Canal ..	549	818	3,208	4,308	5,009	3,415

KRISHNA CANAL.

The total rainfall gauged at Retre Budruk, which is situated in the centre of the canal tract, was 34·32 inches compared with the average of 34·45 inches for the past three years. The rainfall was sufficient, timely and well distributed over the catchment area.

REWARI CANAL.

The rainfall gauged at Rewari, which is situated one mile below the bandhara, was 35·60 inches against 35·96 inches, the average of the

preceding three years. The rainfall was generally good and well distributed during the year under report.

SHOLAPUR DIVISION.

The area irrigated, gross assessed revenue, and working expenses, of the tanks and canals now within the jurisdiction of the Sholapur Division, as compared with the average of the preceding three years, are given in the following statement :—

Name of work.	Area irrigated.		Gross assessed revenue.		Working expenses.	
	1933-34.	Average.	1933-34	Average.	1933-34.	Average.
	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
Ekrak Tank ...	2,844	3,763	1,23,962	1,42,325	43,289	19,936
Koregaon Tank ..	533	541	2,540	2,179	1,967	2,674
Ashti Tank ..	3,491	3,475	16,618	17,445	47,954	13,525
Pathri Tank ..	835	988	16,144	10,440	3,612	5,197
Upper Man River Works.	1,157	1,113	5,271	4,065	5,599	8,697
Yerla River Irrigation Works ..	3,610	3,238	19,294	15,157	9,587	16,549
Chikhli Canal ..	237	289	2,606	1,794	1,487	2,119
Maini Tank ..	1,651	1,734	6,864	6,020	4,438	5,765

EKRUK TANK.

The Ekrak Tank, situated near Sholapur, which came into operation in the year 1872-73, is an artificial reservoir formed by the construction of a large earthen embankment 7,000 feet long and having a maximum height of 76 feet. It supplies water not only for irrigational purposes but also to the town of Sholapur, the mills in Sholapur and the Great Indian Peninsula Railway for non-irrigational purposes. Under unfavourable conditions of replenishment, which occur periodically, the supply available from the tank is not sufficient to meet all the demands which arise, and the question of providing a supplementary storage is under consideration.

On 1st April, the level of the water in the tank was 27·37 feet above the sill of the outlet ; the storage available on 31st May was found sufficient to admit of the cultivation of 500 acres of monsoon crops. The highest level of 38·14 feet was reached on 20th October, and the replenishment received was thus satisfactory in comparison with that of last year when the corresponding level of water was 30·85 feet. The mean rainfall gauged at the five stations in the catchment area of the tank was 24·66 inches, against 22·83 inches, the average of the preceding three years, and the total replenishment received amounted to 1,861·90 million cubic feet.

KOREGAON TANK.

On 1st April, the level of the water in the tank was 86·93 feet, i.e., 4·43 feet above the sill of the outlet. This level gradually fell to 85·33 feet on 31st May, but with replenishments received in August and September, the level rose to 85·50 feet on 11th October. This storage was fully utilised in meeting the demands of the lease-holders.

The rainfall recorded at Koregaon was 26·15 inches against 24·03 inches the average of the preceding three years.

ASHTI TANK.

On 1st April, the level of the water in the tank was 19·64 feet above the sill of the outlet and this gradually fell to 13·86 feet on 9th August, but owing to the occurrence of rain on 10th August, a replenishment of 9·85 million cubic feet was received in the tank and the level again rose to R.L. 225·27 on 14th October. Owing to insufficient rainfall there was a good demand for canal water in the rabi season and the demands of the lease-holders were fully met. The mean rainfall gauged at the two stations situated in the catchment area was 19·49 inches compared with 29·79 inches the average of the preceding three years.

PATHRI TANK.

On 1st April, the level of the water in the tank was R.L. 237·22, i.e., 27·92 feet above the sill of the outlet and this level gradually fell to R.L. 235·78. Due, however, to the occurrence of rain on 2nd June, the level began to rise, and with further replenishments received during the period June, July and August, the level rose to R.L. 242·90 while with effect from 11th September water began to flow over the waste-weir and this continued up to 17th October. The storage was utilised in meeting the demands of lease-holders and of the Barsi Municipality.

The mean rainfall gauged at two stations situated in the catchment area was 27·99 inches against 27·35 inches, the average of the preceding three years.

UPPER MAN RIVER WORKS.

(Pingli Tank.)

On 1st April, the level of the tank was at R.L. 2,364·09 the corresponding contents being 67·26 million cubic feet. The water level fell, on 11th April, to R.L. 2,363·49. The first replenishment was received on 12th April, when the water-level rose to R.L. 2,363·69. The water level attained its maximum height on 10th October, when the level reached R.L. 2371·84 and water began to flow over the waste weir.

The rainfall gauged at Gondavla, which is situated 3 miles below the site of the tank, was 19·81 inches compared with 20·16 inches, the average of the preceding three years.

YERLA RIVER IRRIGATION WORKS.

(Nehr Tank.)

On 1st April, the R. L. of the water in the tank was 2659·75 equivalent to a storage of 247·80 million cubic feet. The supply was utilised for hot weather irrigation. The first replenishment was received on 30th May and the second on 3rd June, when the R. L. of the water was 2662·30 giving a storage of 307·89 million cubic feet. The water level remained more or less constant till 5th June, after which it steadily increased until the waste weir began to overflow on 20th June. The highest level reached during the year occurred on 29th September, when the R. L. of the water was 2667·50. The rainfall gauged at Khatgoon, which is situated about 4 miles below the site of the tank, was 36·31 inches compared with 39·86 inches; the average of the previous three years.

CHIKHLI CANAL.

On 1st April, the level of the water in the river was 2'-11". The first flood occurred on 20th April and the second on 7th May, while the highest flood received during the year occurred on 4th September. The rainfall gauged at Chikhli was 36·27 inches against 23·84 inches, the average of the preceding three years.

MAINI TANK.

On 1st April, the tank was dry and it remained so until 7th May, when the first replenishment was received and the water level rose to R. L. 2300·22 giving a storage of 18·358 million cubic feet. The second replenishment was received on 30th May and the full supply level, viz. R. L. 2304·52, was reached on 20th August. The highest water level attained during the year under report was R. L. 2304·92 which occurred on 7th September. The rainfall gauged at Maini was 27·31 inches against 23·86 inches, the average of the preceding three years.

KHANDESH DIVISION.

JAMDA CANALS.

These canals receive their supply from the Girna River and this supply is supplemented from time to time by water obtained from the Chankapur Tank in the Nasik Irrigation Division. During the year under report no water could be spared from the Chankapur Tank although such supplementary supply was required. The rainfall during the year was 33·85 inches compared with 31·84 inches, the average of the preceding three years. The subjoined table shows the area irrigated, gross assessed

revenue, and working expenses, as compared with the average of the preceding three years :—

Area irrigated.		Gross assessed revenue.		Working expenses.	
1933-34.	Average.	1933-34.	Average.	1933-34.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
1,854	2,223	16,054	11,563	14,106	12,934

HARTALA TANK.

The tank derives its supply solely from local rains and this supply is precarious. On 1st April, the storage of the tank amounted to 43·83 million cubic feet and this gradually diminished to 31·63 million cubic feet. On 17th May, the first replenishment was received and the contents of the tank increased to 32·34 million cubic feet. The maximum storage of 138·16 million cubic feet was reached on 22nd September, while on 31st March, the storage was 84·66 million cubic feet. The rainfall gauged at the tank was 36·06 inches against 30·67 inches, the average of the preceding three years.

The subjoined table shows the area irrigated, gross assessed revenue, and working expenses, as compared with the average of the preceding three years :—

Area irrigated.		Gross assessed revenue.		Working expenses.	
1933-34.	Average.	1933-34.	Average.	1933-34.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
61	64	760	597	745	900

MHASWA TANK.

The tank derives its supply from local rains. On 1st April, the storage of the tank amounted to 45·76 million cubic feet which gradually diminished to 31·04 million cubic feet. The first replenishment was received on 14th May and this increased the contents to 44·18 million cubic feet. The maximum storage of 168·45 million cubic feet was obtained on 13th September, while on 31st March, the storage was 62·01 million cubic feet.

The rainfall gauged in the tank area was 34·18 inches against 29·14 inches, the average of the preceding three years.

The area irrigated, gross assessed revenue, and working expenses, as compared with the average of the preceding three years are given below :—

Area irrigated.		Gross assessed revenue.		Working expenses.	
1933-34.	Average.	1933-34.	Average.	1933-34.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
390	327	2,323	1,790	1,602	1,770

SHAHADA CHANNEL.

The channel is fed by the Gomai River which has a perennial flow. The rainfall gauged at Shahada was 41·72 inches against 33·29 inches, the average of the preceding three years.

The area irrigated, gross assessed revenue, and working expenses, as compared with the average of the preceding three years are given below :—

Area irrigated.				Gross assessed revenue.		Working expenses.	
Patasthal.		Jirayat.					
1933-34.	Average.	1933-34.	Average.	1933-34.	Average.	1933-34.	Average.
Acres.	Acres.	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
984	1000	272	429	8,074	8,725	10,346	4,120

LOWER PANJHRA RIVER WORKS.

These works comprise 8 bandharas and 9 channels situated between Dhulia and Betawad on the Panjhra River, and the Mukti Tank which is situated about 4 miles to the South-West of Dhulia. The channels obtain their supply from the river but when that supply is insufficient, it is supplemented by water obtained from the Mukti Tank.

On 1st April, the contents of the tank were 119·70 million cubic feet and this figure gradually diminished to 96·53 million cubic feet. The first replenishment was received on 3rd June and this raised the contents to 116·83 million cubic feet. The maximum storage of 320·03 million cubic feet was reached on 19th September. The rainfall in the vicinity of the Lower Panjhra River Works was seasonable and consequently there was a reduced demand for water for irrigational purposes.

The subjoined table shows the area irrigated, gross assessed revenue, and working expenses, as compared with the average of the preceding three years :—

Area irrigated.				Gross assessed revenue.		Working expenses.	
Patasthal.		Jirayat.					
1933-34.	Average.	1933-34.	Average.	1933-34.	Average.	1933-34.	Average.
Acres.	Acres.	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
1,269	1,254	1,174	1,302	25,734	26,939	4,018	8,176

SOUTHERN CIRCLE.

BELGAUM DIVISION.

GADIKERI TANK.

The lands under the command of this tank are all assessed at consolidated rates. The area irrigated and the irrigation share of the land revenue assessed were 418 acres and Rs. 3,516, respectively. The working expenses amounted to Rs. 502.

GOKAK CANAL.

This Canal System is the most important Irrigation Scheme in the Southern Circle, and consists of a Reservoir formed by a masonry weir constructed across the Chataprabha River at Dhupdal, in the Belgaum District, together with 16 miles of Main and Branch Canals and 36 miles of Distributaries. The Canal commands an area of 18,668 acres, the area irrigable being 17,627 acres. Although the Dhupdal Storage is mainly intended for the irrigation of the lands under the Canal, a stipulated quantity of water is issued to the Gokak Mills Company in accordance with the terms of an Agreement reached between Government and the Company, in consideration of which a sum of Rs. 14,313 is annually paid by the Company subject to a rebate in the event of the supply falling short of the quantity contracted for. During the year under report the Mills were supplied with the full stipulated quantity of water, there being sufficient replenishment of the supplies in the Reservoir on account of the heavy rainfall received.

Water was supplied to the M. & S. M. Railway Company at their Hukeri Road Station at a charge of Rs. 50 per mensem. The total amount recovered from the Railway Company during the year was Rs. 600.

On 1st April, the level of water in the Dhupdal Reservoir was 23'80 feet. The level gradually decreased to 20'44 feet on 28th May. Owing to replenishment on the 29th morning the level rose to 20'88 feet. The rise continued up to 30th May when the gauge reading was 22'75 feet.

During the whole monsoon the highest overflow was on 28th July when the gauge reading was 26·90 feet, i.e. 4·60 feet over the weir. The maximum discharge for the day was 1,04,545·27 cusecs. In order to store the water of the last floods, the first instalment of the work of the temporary raising of the weir, viz. by 2 feet, was commenced on 25th September and completed on 10th October, and the work of the second instalment was started on 15th October and finished on 17th November. By the adoption of this method there was no damage to the weir this year.

The following table gives information regarding the area irrigated, revenue assessed, etc., as compared with the average of the previous three years :—

		1933-34.	Average.
Area irrigated	..	6,170 acres.	7,248 acres.
Gross assessed revenue	..	Rs. 55,382	Rs. 69,261
Working expenses	..	Rs. 11,648	Rs. 29,834

DHARWAR DIVISION.

MUCHKUNDI TANK.

This Tank is solely dependent on local rains for its supplies and the storage of water in the tank is uncertain owing to the scanty rainfall in the area and smallness of the catchment. The rainfall during the year was favourable and was quite sufficient for irrigating the lands dependent on the tank. On 1st April, the water level in the tank was at R. L. 1795·24 or 11·80 feet above the sill of the outlet, while it was R. L. 1796·13 or 12·69 feet above the sill on 31st March. The gross assessed revenue was Rs. 930, while the working expenses amounted to Rs. 1,911.

DAMBAL TANK.

The tank was dry at the beginning of the year under report. It received its first replenishment on 9th June. The highest water level of R. L. 145·20 or 8·20 feet above the silted tank bed level was reached on 23rd August. The tank had a good supply of water and the level of water on 31st March was R. L. 143·20 or 6·20 feet above the silted bed of tank. Part of the land under this tank is assessed at water rates, the balance being assessed at consolidated rates. The total area irrigated and the assessment levied under the former head (water rates) were, respectively, 64 acres and Rs. 247 compared with 43 acres and Rs. 187, the corresponding averages of the past three years. The irrigated area under consolidated assessment and the irrigation share of the land revenue assessed were 143 acres and Rs. 916 respectively. The total assessed revenue was Rs. 1,329 while the working expenses amounted to Rs. 648.

MEDLERI TANK.

On 1st April, the water level of the tank was R. L. 173·00 or 8 feet above the sill of the outlet. The tank received first replenishment

on 4th May and the highest level reached during the year was R. L. 178'80 or 13'80 feet above the sill of the outlet. There was an adequate supply of water in the tank during the year. The area irrigated and the assessment levied thereon were 33 acres and Rs. 422, respectively, against 40 acres and Rs. 502, the corresponding averages of the past three years. The gross assessed revenue was Rs. 539 and the working expenses amounted to Rs. 814.

MADAG TANK.

On 1st April, the water level in the tank was R. L. 1876'50 or 3'24 feet above the sill of the outlet. The tank received its first replenishment on 11th April and overflowed from 5th June to 10th February. The highest water level reached during the year was R. L. 1887'95 or 10'24 feet above the crest of the waste weir and the supply in the tank throughout the year was sufficient for irrigation purposes. The level of the water on 31st March was R. L. 1877'06 or 3'80 feet above the sill of the outlet. The upstream right hand side wall of aqueduct No. 1 which was out of plumb was dismantled and rebuilt at an expenditure of Rs. 433 during the year under report. The area irrigated and the assessment thereon were 428 acres and Rs. 2,223, respectively, compared with 492 acres and Rs. 2,215, the corresponding averages of the past three years. The gross assessed revenue was Rs. 2,446 against Rs. 2,600 the average of the previous three years, while the working expenses amounted to Rs. 2,540 against Rs. 1,862, the average of the past three years.

ASUNDI TANK.

On 1st April, the level of the water in the tank was at R. L. 103'26 or 4'26 feet above the sill of the outlet. The tank received its first replenishment on 10th April and the highest level reached was R. L. 108'80 or 1'80 feet above the crest of the waste weir. The supply of water in the tank was sufficient for irrigation purposes, and the level of the water on 31st March was at R. L. 103'72 or 4'72 feet above the sill of the outlet. The lands under this tank are assessed partly at water rates and partly at consolidated rates. The area irrigated and the assessment thereon under the former head (water rates) were 227 acres and Rs. 1,567, respectively, compared with 62 acres and Rs. 432 the corresponding averages of the past three years. The area under consolidated assessment was 190 acres and the irrigation share of the land revenue assessed was Rs. 686. The gross assessed revenue amounted to Rs. 2,919 against Rs. 1,485, the average of the previous three years.

DHARMA CANAL.

This Canal is fed by the Dharma River, and a number of tanks are in turn fed by the Canal. The Canal began to flow on 18th June. The rainfall during the year, though heavy, was favourable. All the 2nd Class tanks depending on this Canal received good replenishment. An amount of Rs. 1,168 was spent during the year on the work of "Raising the bank of Dharma Canal" wherever it was low. The lands commanded

by this Canal are assessed partly at water rates and partly at consolidated rates. The irrigated area and the water rate assessed thereon under the former head (water rates) were 448 acres and Rs. 2,544 respectively against 432 acres and Rs. 2,471 the corresponding averages of the past three years. The area under consolidated assessment was 5,227 acres, the irrigation share of the land revenue assessed thereon being Rs. 24,212. The gross assessed revenue (after deducting Rs. 23,156 to be credited to old work) amounted to Rs. 3,618, while the working expenses amounted to Rs. 4,274 compared with Rs. 1,661 the average of the previous three years.

KANARA DIVISION.

MAVINKOP TANK.

The management of this tank has been entrusted to the Revenue Department. The rainfall was 76 inches and there was an ample supply of water in the tank during the year under report.

The area irrigated under this tank, which is assessed at consolidated rates, amounted during the year to 116 acres and the irrigation share of the land revenue amounted to Rs. 1,850 compared with 634 acres and Rs. 2,045 respectively for the previous year. The working expenses amounted to Rs. 479 as against Rs. 352 during the previous year. The gross assessed revenue was Rs. 1,850.

SECTION II.

COMPRISING IRRIGATION WORKS FOR WHICH NEITHER
CAPITAL NOR REVENUE ACCOUNTS ARE KEPT.

GENERAL REMARKS.

The area of irrigation under, and revenue due from works (for which neither capital nor revenue accounts are kept) in the Deccan and Gujarat, as recorded in the register of these works, were 284,435 acres and Rs. 9,28,027 respectively. The following tables give details (by Districts) of the area irrigated, expenditure, revenue, etc., in respect of irrigation works on which expenditure was incurred during the year :—

TABLE I.

Showing the area irrigated in the different districts in the Deccan and Gujarat and the consolidated revenue and water rates assessed and recovered during the year 1933-34 in respect of Irrigation works classed under works for which neither capital nor revenue accounts are kept on which expenditure has been incurred during the year.

Collectorate.	Number of works.	Area irrigated.	Revenue.			Remarks.
			Irrigation share.	Land share.	Total.	
		Acres.	Rs.	Rs.	Rs.	
Ahmedabad ..	43	3,388	(A) 4,128	7,668	11,796	(A) Includes Rs. 101 on account of Direct Receipts, Water rates.
Kaira ..	49	8,019	(B) 25,615	22,387	48,002	(B) Includes Rs. 14,423 on account of Direct Receipts, Water rates.
Panch Mahals ..	13	1,479	(C) 4,480	1,436	5,916	(C) Includes Rs. 3,791 on account of Direct Receipts, Water rates.
Surat ..	22	1,011	2,168	10,051	12,219	(D) Includes Rs. 1,320 on account of Direct Receipts, Water rates.
Broach ..	7	224	375	1,334	1,709	
West Khandesh ..	3	774	(D) 7,144	991	8,135	
Nasik ..	67	8,475	(E) 70,869	15,366	86,235	(E) Includes Rs. 6,747 on account of Direct Receipts, Water rates.
Poona ..	1	85	(F) 359	..	359	(F) Water rates direct receipts.
Sholapur ..	3	576	(G) 2,053	..	2,053	(G) Water rates direct receipts.
Belgaum ..	23	2,365	9,758	2,440	12,198	(H) Water rates direct receipts.
Dharwar ..	59	8,689	32,656	8,184	40,840	
Bijapur ..	1	..	..	..	..	
Kanara ..	33	4,186	10,186	2,544	12,730	
Ratnagiri ..	1	211	827	..	827	
Ahmednagar ..	2	1,914	(H) 12,286	..	12,286	
Total ..	327	41,396	1,82,904	72,401	2,55,305	

TABLE II

TABLE

Showing actual expenditure and receipts for the year 1933-34 on the revenue accounts are kept) on which

Collectorate.	Expenditure.						
	Direct Charges.						
	Extensions and improvements.	Maintenance and repairs.	Establishment.	Tools and plant.	Total.	Share of collection charges.	Grand Total.
1	2	3	4	5	6	7	8
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Ahmedabad ..	3,119	14,951	17,066	713	66,911	{ 413	70,372
Kaira ..	695	21,254				{ 2,767	
Panch Mahals ..	..	9,113				{ 281	
Surat ..	..	17,228	6,938	290	27,202	{ 217	27,456
Broach ..	..	2,746				{ 37	
West Khandesh ..	186	468				608	2,117
Nasik ..	1,592	36,521	44,843	496	83,452	6,547	89,999
Poona ..	1,132	11,094	42,482	159	54,867	7	54,874
Sholapur ..	202	1,824	2,264	44	4,334	52	4,386
Belgaum ..	928	13,033	6,050	364	20,375	976	21,351
Dharwar ..	2,981	32,171	15,358	893	51,899	3,293	55,192
Bijapur ..	..	496					
Kanara ..	3,007	14,712					
Ratnagiri ..	..	3,500	1,516	91	5,107	83	5,190
Ahmednagar ..	Works 4,183 ; Extension and improvements 1,500	13,188	28,853	246	47,970	246	48,216
Total ..	Works 4,183 ; Extensions and improvements 15,342	1,92,299	1,73,889	3,772	3,89,485	16,545	4,06,030

II.

Irrigation Works in the Deccan and Gujarat (for which neither capital nor expenditure was incurred during the year.

Actual Receipts.

Direct Receipts.			Indirect receipts share of consolidated revenue.	Grand total, direct and indirect receipts.	Less refunds of revenue.	Gross receipts less refunds.
Water rates from irrigation.	Miscellaneous.	Total direct receipts.				
9	10	11	12	13	14	15
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
{ 101	572	673	4,027	4,700	....	4,700
14,423	8,949	23,372	11,192	34,564	....	34,564
3,791	1,373	5,164	689	5,853	....	5,853
{ ..	..	..	2,168	2,168	....	2,168
..	..	..	375	375	....	375
1,320	48	1,368	5,824	7,192	....	7,192
6,747	1,422	8,169	64,122	72,291	62	72,229
359	161	520	....	520	....	520
2,053	1,497	3,550	....	3,550	....	3,550
..	..	....	9,758	9,758	....	9,758
{ ..	272	272	32,656	32,928	....	32,928
....	..	....	10,186	10,186	....	10,186
....	..	....	827	827	....	827
12,286	3,884	16,170	....	16,170	1	16,169
41,080	18,178	59,258	1,41,824	2,01,082	63	2,01,019

DETAILED REPORTS BY LOCAL OFFICERS.

NORTHERN CIRCLE.

AHMEDABAD, KAIRA AND PANCH MAHALS AND SURAT AND
BROACH DIVISIONS.

KHARI SLUICES.

At Pinglaj, the head of the Khari sluices system, the Khari river was in flood on the 22nd June for the first time during the year. This flood lasted for 4 days and the river then ceased to flow until 16th July when it again commenced to flow and continued to do so throughout the season. As a result of the floods in the Khari river, the Bherai and Naika Reservoirs and other second class tanks under the system were filled to their full capacity. No difficulty was experienced in respect of the work of transplanting the full area assessed to himayat in the Kalambandhi villages.

Out of the himayat paying area of 7,046 acres in 11 Kalambandhi villages, 6,406 acres were cropped with rice. A non-himayat paying area of about 447 acres was irrigated and the crops thereon brought to maturity. Due to heavy floods the Khari river over-flowed its banks and consequently its left bank breached at five places within the limits of Bidaj, Sarsa and Kanera villages of the Kaira District. These breaches have since been completely repaired. The Khari sluices, including the Goblaj Tank, the Bherai and the Naika Reservoirs were maintained in good order at a cost of Rs. 4,525, while a further sum of Rs. 175 was spent on emergent repairs to the breaches in the Goblaj Tank. The miscellaneous revenue under the Khari sluices system amounted to Rs. 641 compared with Rs. 422 received during the previous year.

The following table compares the areas irrigated and the assessment levied during the year with the respective averages of the previous three years :—

	Average.		1933-34.	
	Area.	* Revenue after deducting remissions.	Area.	* Revenue after deducting remissions.
	Acres	Rs.	Acres	Rs.
I. Irrigation above Kalambandhi villages of Mahij, Bidaj and Lali.	542	4,061	1,148	3,260
II. Irrigation from tanks fed by the river Khari—(Goblaj) ..	879	4,012	549	6,213
(Galki) ..	350	1,031	411	740
III. Irrigation from the Khari sluices proper (i.e. 11 Kalambandhi villages) ..	6,425	33,087	6,406	32,359
Total ..	8,196	42,191	8,514	42,572

* The revenue is consolidated.

The assessment in respect of irrigation dependent on the Khari sluices in the 'Kalambandhi villages' is consolidated. The average rates per acre for land and water respectively were as under :—

				Irrigation share.	Land share.	Total consolidated.
				Rs. a. p.	Rs. a. p.	Rs. a. p.
Government land	..	..	..	0 5 4	5 5 6	5 10 10
Alienated land	..	..	..	0 5 4	1 7 3	1 12 7

MUVALIA TANK.

This is an important tank situated in the vicinity of Dohad town in the Broach and Panch Mahals Collectorate, and it has a catchment area of about 39 square miles located in a hilly tract. During the year under review the tank filled to its full capacity and over-flowed from the waste weir during the period 20th August to 21st October 1933. The height of water above the crest of the weir varied from 0 feet to 3·5 feet. The water cushions of the waste weir were seriously damaged during the abnormal floods of the year and also the causeway over Sukna Nalla in mile 0/8 was partly washed away, the damage was, however, made good later. The rainfall at the site of the tank was 41·59 inches. The total area irrigated during the year was 743 acres and the assessment thereon amounted to Rs. 2,749. The miscellaneous revenue realised amounted to Rs. 275 against Rs. 800 received in the previous year. The tank with its dam, canals, distributaries, service road, etc., were maintained in good order at a total cost of Rs. 4,450.

OLD TANKS.

Improvements to 1 tank in the Ahmedabad Division, and repairs to 32 tanks in the Ahmedabad Division, 49 tanks in the Kaira and Panch Mahals Division, and 29 tanks in the Surat and Broach Division, were carried out at a total cost of Rs. 239 and Rs. 44,559, respectively. The areas irrigated and the revenue derived from the old irrigation tanks and bunds were as under :—

Name of Collectorate.				Area irrigated.	Revenue.		
					Irrigation share.	Land share.	Total consolidated assessment.
				Acres.	Rs.	Rs.	Rs.
Ahmedabad	..	..	..	14,806	19,997	47,937	67,934
				451	1,575	223	1,798
Kaira	..	..	..	270	689	1,436	2,125
Panch Mahals	..	..	..	1,795	5,803	28,890	34,693
Surat	..	..	..	823	1,481	5,015	6,496
Broach	..	..	..				
Total ..				18,145	29,545	83,501	1,13,046

The drainage channels in the Ahmedabad, Kaira and Panch Mahals, and Surat and Broach Divisions were maintained in good order at a cost of Rs. 7,766, Rs. 4,086, and Rs. 4,780, respectively. The protective and reclamation works in the Surat and Broach Division were maintained and repaired at a total cost of Rs. 7,351.

DECCAN IRRIGATION CIRCLE.

POONA IRRIGATION DIVISION

RAKH TANK.

This tank is situated about 5 miles from Walha Railway Station of the Madras and Southern Mahratta Railway. There is an earthen dam across a Nalla near Rakh Village in Purandhar Taluka of the Poona District. The tank has two channels of a total length of 35/8 miles. The area under command on channel No. 1 which is on the Left Bank is 265 acres and that on channel No. 2 is 321 acres. There was no irrigation from the main channel of this tank during the year under report but an area of 90 acres was irrigated by leakage channels and the revenue realised amounted to Rs. 580.

KHAMGAON TANK.

This tank, which is only partially completed, received replenishment during the monsoon. The supply available was issued for the irrigation of 85 acres and the gross assessed revenue was Rs. 426, the corresponding figures for the previous year being 70 acres and Rs. 382 respectively. The maintenance and repairs charges on the tank amounted to Rs. 369.

EFFLUENT IRRIGATION ON THE MUTHA RIGHT BANK CANAL.

The total cane area on effluent during the year was 1,063 acres as against 1,079 acres during the previous year. The average discharge of effluent pumped during the year was 11' 18 cusecs out of which 9' 73 cusecs were used for irrigation. The balance of 1' 45 cusecs had to be run off to winter disposal area. The total area of different crops on effluent (including cane area) was 1,459 acres. The rate of effluent for cane was reduced from Rs. 60 to Rs. 55 and the revenue assessed amounted to Rs. 54,317.

BANDHARAS.

The subjoined table gives the area irrigated on, and the consolidated assessed revenue received from, the Bandhara irrigation works in the Poona Collectorate during the year as compared with the average of the pass three years :—

Particulars.	Area irrigated.	Consolidated revenue.		
		Irrigation share.	Land share.	Total.
	Acres.	Rs.	Rs.	Rs.
1953-34	2,815	14,320	4,882	19,202
Average	2,785	13,519	5,440	18,959

NASIK IRRIGATION DIVISION.

KHIRDI SATHE TANK.

This is a small tank depending on local rains for its supply which is generally sufficient for crops grown during the monsoon and rabi seasons only. During the year under report a satisfactory rainfall was received in the catchment of the tank and due to sufficient storage it was possible to supply water to the area under sugarcane throughout the year. On 1st April, the level of water in the tank was 9' 15 feet above the sill, the corresponding contents being 19'50 million cubic feet. The area irrigated during the year was 494 acres as against 434 acres of the previous year. The assessed revenue was Rs. 5,178 as compared with Rs. 5,078 of the previous year. There were no remissions. Refunds amounting to Rs. 31 were granted.

BANDHARAS.

There are numerous bandharas situated in this Division. Bandharas are small weirs built across streams in order that the level of the water flowing in the streams may be raised sufficiently to command the lands to be irrigated. There are 296 such works in the Nasik District. The total expenditure incurred on these works during the year amounted to Rs. 28,678. The supply of water to these bandharas was sufficient owing to good rains. The following table shows the area irrigated and the revenue received during the year under report together with the corresponding figures for the past three years :—

Year.	Area irrigated.	Consolidated revenue.		
		Irrigation share.	Land share.	Total.
	Acres.	Rs.	Rs.	Rs.
1933-34	28,550	2,14,865	57,471	2,72,336
Average	28,593	1,94,675	52,610	2,47,285

AHMEDNAGAR DIVISION.

VISAPUR TANK.

The Visapur Tank Dam built across the Hanga river, a tributary of the Bhima river, was started as a famine relief work in 1896, and the work was subsequently completed in slow stages by criminal tribes and convict labour. This earthen dam, which is 7,440 feet long and 84 feet high, forms a lake having a net capacity of 1,136 million cubic feet. It was completed in June 1927. The estimated cost of the whole scheme was Rs. 41 lakhs out of which Rs. 21 lakhs were spent on the dam and head works and the balance on the construction of the canal, distributaries and minors, which aggregate 46 miles in length. The total area under

command is 95,000 acres of which 26,000 acres are irrigable. The catchment area of the tank is 159 square miles and it has a capacity of 1172 million cubic feet over the sill of the outlet. Irrigation from this tank was first started during the rabi season of 1929-30. The waste weir was raised by 2 feet in March, to increase the storage by 130·20 million cubic feet. The yield from the catchment was 4,965·14 million cubic feet during the year under report. The average rainfall was 29·81 inches.

On 1st April, the water level in the tank was 28·62 feet above the sill of the outlet, the contents being 635·22 million cubic feet. The lowest level of 26·05 feet was reached on 29th May, the contents then being 533·30 million cubic feet; the replenishment commenced on the same date and the highest level of 40·60 feet was reached on 11th September and the waste weir overflowed with 1·10 feet of water. On 31st March, the level was 35·05 feet, the corresponding contents being 941·37 million cubic feet.

The area irrigated during the year, the irrigation assessment, and the gross assessed revenue were 1914 acres, Rs. 12,105 and Rs. 15,887 respectively compared with 2,961 acres, Rs. 9,686 and Rs. 13,873 respectively, the average of the past three years. The Belwandi Sugar Farm has started cane plantation (on the Chimbla Distributary) and the area was 454 acres. The expenditure incurred on maintenance and repairs during the year amounted to Rs. 7,089.

KUNTEPHAL TANK.

This is a very small tank with a capacity of about 57 million cubic feet and it is situated on a small nalla about 45 miles from Ahmednagar. The tank is entirely dependent for its supply on local rains.

On 1st April, the level of water was 4·10 feet above the sill, the corresponding contents being 3·32 million cubic feet. The lowest level reached was 3·10 feet, the contents then being 2·09 million cubic feet. The first replenishment was received on 17th May and the level rose to 5 feet, the corresponding contents being 4·81 million cubic feet. The highest water level of 15 feet was reached on 12th September. The water level on 31st March was 35 feet, the corresponding contents being 16·72 million cubic feet. The rainfall during the year was 26·26 inches compared with 21·30 inches, the average of the past 3 years. The expenditure incurred on maintenance and repairs amounted to Rs. 1,133.

CENTRAL CIRCLE.

The area irrigated and the gross assessed revenue on small tanks were 721 acres and Rs. 3,161, respectively. The area irrigated and the irrigation share of revenue on the old bandharas and channels in the Khandesh Division were 8,665 acres and Rs. 64,954, respectively.

SHOLAPUR DIVISION.

WADSHIVNE TANK.

On 1st April, the reduced level of the water in the tank was 446·30 feet, i.e., 10·30 feet above the sill of the outlet, and this level gradually fell

to R. L. 444·99 but owing to the rainfall received on 30th May, the level began to rise and, with the replenishment received during the period August, September and October, the level finally rose to R. L. 454·60.

During the year under report, the area irrigated was 576 acres as compared with 484 acres, the average of the past three years.

The gross assessed revenue during the year under report was Rs. 2,525 against Rs. 1,957, the average of the past three years.

KHANDESH DIVISION.

TALWADA TANK.

The supply in this tank is generally uncertain. On 1st April, the contents in the tank were 28·31 million cubic feet and this figure gradually diminished to 19·05 million cubic feet. The first replenishment was received on 21st June and this increased the contents to 30·96 million cubic feet. The maximum storage of 117·22 million cubic feet was reached on 22nd September, and the year closed with a storage of 77·98 million cubic feet of water in the tank.

The rainfall gauged at the tank was 26·01 inches compared with 22·48 inches the average of the preceding three years. The area irrigated was 145 acres and the gross assessed revenue amounted to Rs. 636. The revenue realised from water rates during the year was Rs. 1,321, the miscellaneous realisation being Rs. 48. The expenditure incurred on the maintenance and repairs to the tank and canal was Rs. 400.

OLD WORKS.

The old bandharas and channels are grouped as under :—

1. Upper Panjhra River group including the Gondur Tank.
2. The Kan River group.
3. The Burai River group.
4. The Girna River group.
5. The Bori River group.

The sub-joined table shows the area irrigated and revenue derived from these works as compared with the figures for the preceding three years :—

Area irrigated.		Revenue.				Total.	
		Irrigation share.		Land share.			
1933-34.	Average.	1933-34.	Average.	1933-34.	Average.	1933-34.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
8,665	8,636	64,954	65,136	13,193	13,216	78,147	78,352

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The expenditure incurred on these bandharas was as under :—

				Rs.
Extensions and Improvements	..	..	..	186
Repairs	..	..	..	68

An expenditure of Rs. 179 was also incurred on river and rain gauge operations during the year.

SHOLAPUR DIVISION.

BORGAON DAM.

The total area irrigated during the year was 105 acres and the consolidated revenue assessed was Rs. 563. The irrigation share of the revenue amounted to Rs. 338 and the balance of Rs. 225 represents the land revenue assessed.

SAP NALLA.

The total area irrigated during the year under report was 201 acres and the consolidated revenue assessed was Rs. 614. The irrigation share of the revenue amounted to Rs. 368 and the balance of Rs. 246 represents the land revenue assessed.

SOUTHERN CIRCLE.

BELGAUM DIVISION.

There are approximately 540 second class irrigation tanks in this Division. During the year under report, repairs to 23 tanks were carried out at a cost of Rs. 13,033, and in addition to this sum an expenditure of Rs. 928 was incurred on the survey of old tanks. The area irrigated during the year was 15,027 acres, the irrigation share of the land revenue being Rs. 84,076. The total direct and indirect receipts amounted to Rs. 80,080 compared with Rs. 75,450 received during the previous year.

DHARWAR DIVISION.

There are approximately 1,744 tanks in this Division. During the year under report, an expenditure of Rs. 31,277 was incurred on repairs to 60 tanks and a sum of Rs. 3,014 was spent on extensions and improvements. The area irrigated was 49,911 acres and the irrigation share of the land revenue amounted to Rs. 1,75,439. The total direct and indirect receipts amounted to Rs. 1,76,960 compared with Rs. 1,76,207 received during the previous year. The working expenses were Rs. 71,706.

KANARA DIVISION.

In this Division there are approximately 2,128 tanks. During the year, an expenditure of Rs. 14,712 was incurred on repairs to 33 tanks. A sum of Rs. 2,109 was spent on "Surveying old tanks and preparing projects for their improvements" and Rs. 898 for carrying out additions and

alterations to an Irrigation Store. The area irrigated during the year was 33,205 acres and the irrigation share of the land revenue was Rs. 93,505.

RATNAGIRI DIVISION.

There are only 3 tanks in this Division. Special repairs to one tank, viz. the Tank at Varad—Reconstructing the Regulator of the tank—was carried out at a cost of Rs. 3,500 during the year under report. The area irrigated during the year was 1,109 acres and the irrigation share of the land revenue was Rs. 6,583. The gross assessed revenue was Rs. 6,683 and the whole of this sum was realized during the year.

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SECTION III.

IRRIGATION RESEARCH DIVISION.

In the Deccan when a large perennial canal is opened, widespread water-logging due to percolation from the canal is liable to ensue. Some of this water-logging dries out later, but the damage often extends rapidly into the valleys, and unless steps are taken to set matters right, the damage, consisting mainly of salt efflorescence, becomes permanent. The seriousness of the manace was realised as early as 1888 and the controversy regarding the relative effect of channel losses and wasteful irrigation and the best methods to adopt to safeguard the land became yearly more acute. Various experiments were carried out at the instance of the Agricultural Department but by 1913 it was clear that all the methods tried so far had failed. It was eventually decided to open a Special Irrigation Division in order that the question of canal development, especially as regards safeguarding the soil, might form the subject of investigation. In June 1916, the Division (now called the Irrigation Research Division) was formed and the work entrusted to it was to contour the commanded area, make a careful survey and classification of the surface and sub-soil, select and mark out definite area suitable for "blocks" for perennial and other crops, design the drainage required, indicate suitable lines of communication and centres for the establishment of crushing, grinding, and refining and other machinery for trade purposes, and to make a study of the reclamation of waste lands and areas damaged by water-logging and salt efflorescence and the growth of useful timber in such tracts and along the main canal. In short, research and investigation into all the problems relating to irrigation by actual experiment, has been the sphere of work of this Division.

The investigations coming within this sphere may be broadly grouped under 5 heads, viz. (1) Irrigation management, (2) Irrigation requirements or the inter-action agricultural requirements and Irrigation limitations, (3) Soil Physics of irrigated tracts as affecting, (4) Drainage and reclamation and (5) Hydrodynamic Research. The results of these investigations are published in Technical Papers from time to time.

The work done in this Division during the year under report may be classified as under :—

- (1) Sub-soil survey and classification.
- (2) Observation of sub-soil water levels.
- (3) Drainage of lands damaged by water-logging and salt efflorescence.
- (4) Irrigation and blocks.
- (5) Sugar factories.
- (6) Irriculture at the Effluent Experimental Area.
- (7) Irriculture at the Experimental Salt area.
- (8) Experimental work done in the Effluent Research Laboratory.
- (9) Experimental work done at the Research Laboratory at Baramati.
- (10) Hydrodynamic Research.

A brief account of the work done during the year under report under these heads is given below :—

(1) SOIL SURVEY AND CLASSIFICATION.

Nira Right Bank Canal.—Surveys in connection with the sub-soil drainage of Sugar Company areas were taken in hand and work is in progress between Distributary Nos. 7 to 17 of the main canal and between Distributary Nos. 21 to 29 of Branch No. I.

Nira Left Bank Canal.—The work of demarcating damaged areas on the Nira Left Bank Canal was completed during the year under report. The total damage noted during the period November 1932 to June 1933 amounted to 16,594 acres against 15,092 acres in the period 1930-31. The 8' murum isobath surveys of Distributary Nos. 45 and 46 were in hand in connection with sub-soil drainage for Kalamb Sugar Factory.

Godavari Canals.—The damaged area classification was completed. Partly due to reduction in cane areas and partly due to better distribution of cane in accordance with the X-c classification, the lands are drying out on the Godavari Right Bank Canal. The total damaged area was 8,835 acres against 11,415 and 10,909 acres in 1931-32 and 1929-30 respectively. The damage on the Godavari Left Bank Canal is 5,053 acres against 4,778 acres in 1931-32. The 8' murum isobath was checked near aqueduct 7 of Godavari Left Bank Canal.

Pravara Canals.—The 12" murum isobath on the Belapur Sugar Company's extension area and the 8' murum isobath in areas on Distributary Nos. 6 and 7 of Pravara Left Bank Canal were checked. The damaged area classification commenced during the last year was completed.

Girna Left Bank Canal.—The soil classification of lands between Distributary Nos. 3 and 6 in connection with the Ravalgaon Sugar Farm was carried out and the 12" murum isobath work for Distributary Nos. 4 and 5 was completed. The work for the remaining areas is in progress.

The X-c classification of lands irrigated in the perennial section of the Godavari Canals was further investigated and revised by sub-catchments for better distribution of cane area in absence of drainage. The detailed X classification for the Nira Left Bank Canal was prepared.

Suitability of various soils and sub-soils for fruit gardens in canal tracts was further investigated. The preparation of plans showing "positional suitability" for fruit gardens for various canals is nearing completion.

(2) OBSERVATIONS OF SUB-SOIL WATER LEVELS.

The Nira Right Bank, Nira Left Bank, Godavari and Pravara Canals were under observations in connection with the sub-soil water levels.

Nira Right Bank Canal.—The number of wells observed was 2,300 ; of these 1,150 wells indicate the sub-soil water level to be within 10 feet from ground level.

Nira Left Bank Canal.—The number of wells observed was 1,700 and the sub-soil water levels are practically constant.

Godavari Canals.—The number of wells observed was about 2,100. The water levels on the Godavari Right Bank Canal have generally fallen while those on the Godavari Left Bank Canal have risen. The former is due to decrease of irrigation.

Pravara Canals.—The number of wells observed was about 3,700. The water levels have generally risen in spite of reduction in cane areas both on Pravara Right and Left Bank Canals.

Water samples from wells were tested for salinity and their conductivity results recorded. The number of samples tested were as follows :—

Name of canal.			No. of water samples tested.
Nira Right Bank Canal	..	..	894
Nira Left Bank Canal	..	..	1,544
Godavari Canals	..	..	30
Pravara Canals	..	..	688

(3) DRAINAGE OF LANDS DAMAGED BY WATER-LOGGING AND SALT EFFLORESCENCE.

The project work of drainage schemes carried out this year was almost entirely confined to areas where sugar companies have been started on the various canals.

The progress on the Manjri Drainage Scheme was better this year. All the damaged lands have been acquired by Government. The effect of the new drains was very rapid. The spring tapped on E. N. O. T. in March 1933 still flows and is the cause of rapid drying out in the vicinity. The water when tested showed a conductivity of 400 with PH value of about 7.5 and small traces of effluent—though the nearest effluent irrigation is at a distance of about a mile.

The construction and maintenance of all drainage schemes have been handed over to the respective Divisions but observations of sub-soil water levels and damaged areas continue to be observed by this Division.

(4) IRRIGATION AND BLOCKS.

The block work on various canals in the Deccan was transferred to the respective Divisions from this year.

Fruit blocks.—Individual inspection as regards drainage and suitability of soil, etc., for fruit trees to the extent of 320 acres was carried out during the year.

(5) SUGAR FACTORIES.

Surveys for Drainage Projects for the company areas were in full swing as already stated under (3) Drainage of lands damaged by water-logging and Salt Efflorescence.

The following facilities to the sugar companies have been given when possible :—

(1) Cane sets of new varieties were sold to the Sugar companies from the Government experimental areas at Hadapsar and Baramati. These were available as the demand had been foreseen.

(2) Provisional permission to grow cane in lands having soils more than 9" deep overlying soft murum was given in the case of two companies that Government agreed had insufficient suitable land in their factory areas.

(6) IRRICULTURE EFFLUENT EXPERIMENTAL AREA.

Experiments with regard to the use of effluent as a manure and other irricultural experiments were carried out during the year.

As effluent received is now in excess of requirements, effluent irrigation up to harvesting was compared with the usual method of discontinuing water 3 months prior to crushing to ascertain the effect of effluent on maturity and yield. The yield is nearly the same in both but Gul was inferior in the case of plots irrigated with effluent till harvest as can be judged from sucrose and purity percentage of juice.

In another experimental outturn of cane from a plot with regular 10-day intervals throughout the year was compared with that where 3 turns were omitted in the hot-weather with a view to gauge the effect of irregular waterings in hot-weather on yield. The results were :—

		Outturn of Gul. Lbs. per acre.
(a) Regular 10-day interval	.. ..	10,443
(b) Irregular waterings in hot-weather (the soil was well stirred when irrigations were missed)	.. ..	9,713

The reduction was 7.5 per cent. this year as compared with 10 per cent. in 1931-32 and 5.9 per cent. in 1932-33.

Introduction of varieties of cane, ploughing cultivators' field with the tractor and letting ridgers on hire were among the activities undertaken in Effluent Experimental Area.

The management of irrigation in the Effluent Zone (Effluent Irrigation) was transferred to the Poona Irrigation Division during this year.

The total expenditure on the Farm during the year amounted to Rs. 9,642 against Rs. 14,430 during the previous year. The total receipts were Rs. 11,454 against Rs. 8,520 in the previous year.

(7) IRRICULTURE BARAMATI EXPERIMENTAL SALT AREA.

The main object of the work is to continue improving the physical condition of the soil until it is fully reclaimed and to investigate the various irricultural problems in these reclaimed deep soils.

The experiments carried out were :—

- (1) Growth of Pundia cane in reclaimed soils ;
- (2) Varieties of cane suitable for damaged soils ;
- (3) Use of coarse manures ;
- (4) Water requirements ;
- (5) Suitable date for sowing Jowar ;
- (6) Suitable date for sowing cotton ;
- (7) Effect of San green manure on Wheat and Jowar ;
- (8) Water *cum* manure experiments.

The following figures show the stage at which reclamation of the areas stands at present :—

			Acres.
Total area acquired	..	..	160
Roads, Trenches, etc.	..	..	26
Area reclaimed	..	..	100
Area under flooding for removing salts	..	..	4
Area under Babul	..	..	15
Area to be reclaimed	..	..	15

The total expenditure amounted to Rs. 14,945 and the total receipts were Rs. 12,330 during the year against Rs. 16,323 and Rs. 9,050 respectively during the last year.

(8) EXPERIMENTAL WORK AT THE EFFLUENT RESEARCH LABORATORY.

In addition to the routine work of analysing effluent samples to calculate the amount of Nitrogen given to sugarcane in different experiments on the Farm and weekly samples of the undiluted effluent to calculate the dose of Nitrogen given to cultivators, the following problems were under investigation :—

- (1) Transpiration Ratios for cane.
- (2) Observations on the seasonal growth of sugarcane and maturity (rise in brix or density) before harvesting.
- (3) Soil reaction in relation to growth of cane.
- (4) Miscellaneous :—
 - (1) Soil reclamation.
 - (2) Changes in the PH value of effluent on keeping.

(9) EXPERIMENTAL WORK AT THE RESEARCH LABORATORY, BARAMATI.

Investigations carried out in the Research Laboratory at Baramati were primarily those in connection with the theoretical aspect of problems arising in the Baramati Experimental Salt Area.

The problems further investigated during the year :—

- (1) Soil treatment with chemical fertilizers.
- (2) Flooding and intermittent irrigation.
- (3) Effect of Farm Yard manure and rice on opening up the soil.

- (4) Soil reaction (PH value) and crop growth.
- (5) Preparation of Sodium Clay for lining channels.
- (6) Miscellaneous :—
 - (1) Electro-metric titrations.
 - (2) Chemical analysis of weeds growing the normal and alkali soils.
 - (3) Examination of suspended silt (turbidity) in canals.
 - (4) Examination of well waters from certain typical areas.

(10) HYDRO-DYNAMIC RESEARCH.

In the laboratory at Poona, a considerable amount of work in connection with hydrodynamic Research was done, such as, analysis, grading and abrasion, etc. of silt. Also work on the use of tilting manometer for obtaining silt distribution curves was carried out and the electrodialysis method for determining replaceable bases in soils was tried. The experiments are in progress.

STATEMENT

Statement of Area irrigated by Irrigation Works in the Bombay

No.	Name of work.	Area irrigated.					Double cropped.	
		Kharif.	Rabi.	Total	Flow.	Lift.	Area irrigated.	Percentage of total area.
1	2	3	4	5	6	7	8	9
	WORKS FOR WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	
	PRODUCTIVE.							
	Southern Circle.							
1	Gadikeri Tank	*418	..	*418	*418	..	..	..
2	Mavinkop Tank	*116	..	*116	*116	..	..	..
	Central Circle.							
3	Ekrak Tank	{ (534) 924	(991) 1,920	(1,525) 2,844	2,780	64	..	..
4	Shabada Channel	{ (497) *423 84	(745) *561 188	(1,242) *984 272	1,256	..	..	..
	Total, Productive ..	{ 1,008 *957	2,108 *561	3,116 *1,518	4,570	64	..	..
	UNPRODUCTIVE.							
	Northern Circle.							
5	Hathmati and Khari Cut Canals	{ 936 10,953	3,136 658	4,072 11,611	4,057 11,363	15 248	..	..
6	Wangrol Tank	726	389	1,115	1,092	23	..	..
7	Savli Tank	1,291	4	1,295	1,291	4	..	..
8	Saiet Tank	172	174	346	344	2	..	..
9	Tranza-Nagramm Tanks ..	77	11	88	84	4	..	..
10	Futelo Tank	26	55	81	81	..	..	..
	Deccan Irrigation Circle.							
11	{ Nira Left Bank Canal ..	{ (26,202) 32,474	(31,990) 17,088	49,562	49,241	321	11,383	23
	{ Shetphal Tank	{ (2,818) 3,345	(2,311) 813	4,158	4,158	..	597	13
12	Nira Right Bank Canal ..	{ (18,616) 18,657	(15,732) 15,197	33,854	33,848	6	277	0.82
13	Mhaswad Tank	{ (2,612) 3,033	(918) 1,033	4,066	4,066	..	..	..
14	{ Mutha Canals	{ (6,125) 6,729	(4,884) 1,488	8,217	8,127	90	8	0.90
	{ Matoba Tank	{ (743) 818	(1,661) 1,892	2,710	2,710	..	408	15
15	Kasurdi Tank	{ (3) 5	(46) 52	57	57	..	..	..
16	Shirauphal Tank	{ (415) 463	(494) 582	1,045	1,045	..	..	..
17	Bhadalwadi Tank	{ (197) 210	(461) 540	750	750	..	..	..

I-E.

Presidency, excluding Sind, during the year 1933-34.

Average discharges, cubic feet per second.				Area irrigated per cubic foot per second.				Base to which the duties of water are calculated.	
At Head.		Utilized.		Discharged at Head.		Utilized.		Kharif.	Rabi.
Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.		
10	11	12	13	14	15	16	17	18	19
				Acres.	Acres.	Acres.	Acres.		
..	..	..	..	..	..	..	..	16th January to 15th October.	16th October to 15th January.
..	..	..	..	..	..	..	..		
7'27	11'42	7'27	11'42	90	108	90	108	15th February to 14th October.	15th October to 14th February.
5'51	8'34	5'51	8'34	92'01	89'81	92'01	89'81	Do.	Do.
..	..	..	..	..	..	..	..		
1178 93	151 25	159 93	135 25	5'26 117'77	20'76 26'32	15'86 117'77	23'23 26'32	15th June to 15th November.	16th November to 14th February.
47'85	25'47	47'85	25'47	15'17	15'27	15'17	15'27		
54'08	0'92	54'08	0'92	23'87	4'35	23'87	4'35	15th June to 14th November.	15th November to 14th February.
19'86	11'10	19'86	11'10	8'66	15'68	8'66	15'68		
4'25	..	4'26	..	18'00	..	18'00	..		
..	1'89	..	1'89	..	29	..	29		
(b)3'12	(b)372	(b)239	(b)308	77	86	110	104	15th February to 14th October.	15th October to 14th February.
18	25	18	25	156	92	156	92		
4'81	6'00	4'81	6'00	(c)39	(c)26	(c)39	(c)26	Do.	Do.
76	56	76	56	(c)37	(c)17	(c)37	(c)17	Do.	Do.
163	131	(h)	(h)	(i)38	(i)36	(h)	(h)	Do.	Do.
9	11	9	11	83	151	83	151	Do.	Do.
..	..	..	..	..	..	..	..	Do.	Do.
(f) 4'29	4'21	4'29	4'21	(j) 97	108	97	108	Do.	Do.
4'97	6'27	4'97	6'27	39	74	39	74	Do.	Do.

STATEMENT

No.	Name of work.	Area irrigated.					Double cropped.	
		Kharif.	Rabi.	Total.	Flow.	Lift.	Area irrigated.	Percentage of total area.
1	2	3	4	5	6	7	8	9
	WORKS FOR WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT— <i>contd.</i>	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	
	UNPRODUCTIVE— <i>contd.</i>							
	Deccan Irrigation Circle— <i>contd.</i>							
	{ Lake Beale—Darna Dam	{ (276) 276	{ (176) 176	{ 452	..	452	..	..
18	{ Godavari Right Bank Canal	{ (4,541) 7,796	{ (3,039) 1,142	{ 8,938	8,870	68	819	11.20
	{ Godavari Left Bank Canal	{ (4,358) 6,428	{ (4,578) 933	{ 7,361	6,994	367	675	7.84
19	Chankapur Tank— Girna Left Bank Canal	{ (3,285) 3,285	{ (2,581) 2,688	{ 5,973	5,970	3	50	0.60
	{ Palkhed Canal	{ (687) 821	{ (1,169) 1,171	{ 1,992	1,982	10	32	1.72
20	Kadwa River Works { Ojhar-Tambat Canal {	{ (290) 447	{ (533) 533	{ 980	980	..	4	0.48
	{ Wadali Canal	{ (419) 419	{ (584) 566	{ 985	985	..	5	0.49
21	Parsul Tank	{ (204) 227	{ (440) 483	{ 710	710	..	10	1.40
	{ Pravara Right Bank Canal	{ (3,970) 4,836	{ (2,902) 839	{ 5,675	5,675	..	375	6.61
22	{ Pravara Left Bank Canal	{ (11,350) 14,151	{ (10,681) 3,473	{ 17,624	17,478	146	921	5.23
23	Bhatodi Tank	{ (176) 204	{ (448) 428	{ 632	620	12	19	3.01
	Central Circle.							
24	Koregaon Tank	{ (42) 58	{ (363) 475	{ (405) 533	533	..	..	..
25	Ashiti Tank	{ (923) 1,054	{ (1,918) 2,437	{ (2,841) 3,491	3,481	7	..	..
26	Pethri Tank	{ (31) 39	{ (597) 796	{ (628) 835	818	17	..	..
27	Jamda Canals	{ (752) 818	{ (945) 1,136	{ (1,697) 1,854	1,852	2	..	..
28	Hartals Tank	{ (6) 8	{ (49) 53	{ (55) 61	61	..	..	..
29	Mhaswa Tank]	{ (8) 9	{ (364) 381	{ (372) 390	388	2	..	..
30	Lower Panjhra River Works	{ (270) 1,145	{ (869) 1,124	{ (1,139) 1,269	2,443	..	16	0.65
31	Krishna Canal	{ (2,990) 3,504	{ (701) 807	{ (3,691) 4,311	3,761	550	23	0.53
32	Revani Canal	{ (94) 115	{ (366) 434	{ (460) 549	548	1	24	4.37
33	Upper Man River Works	{ (228) 231	{ (921) 926	{ (1,149) 1,157	1,153	4	80	7
34	Yerla River Irrigation Works	{ (394) 421	{ (3,036) 3,189	{ (3,430) 3,610	3,578	32	118	3

I-E—contd.

Average discharges, cubic feet per second.				Area irrigated per cubic foot per second.				Base to which the duties of water are calculated.		
At Head.		Utilized.		Discharged at Head.		Utilized.		Kharif.	Rabi.	
Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.			
10	11	12	13	14	15	16	17	18	19	
				Acres.	Acres.	Acres.	Acres.			
174	239	174	239	(e) 26	(e) 12	(e) 26	(e) 12	15th February to 14th October.	15th October to 14th February.	
121	130	121	130	(e) 38	(a) 35	(e) 38	(e) 35			
63	72	63	72	(n) {	52	70	52	70	Do.	Do.
31	35	31	35		22	33	22	33	Do.	Do.
14	15	14	15		20	35	20	35	Do.	Do.
12	12	12	12	34	48	34	48	Do.	Do.	
(i) 4	6	4	6	(j) 51	85	51	85	Do.	Do.	
78	83	62	77	(e) 51	(e) 35	(e) 60	(e) 38	Do.	Do.	
359	347	339	343	(e) 32	(e) 31	(e) 33	(e) 31	Do.	Do.	
0 89	1 19	0 89	1 19	(k) 148	(k) 376	(k) 198	(k) 376	Do.	Do.	
0 086	2 19	0 036	2 19	488	190	488	190	Do.	Do.	
2 46	13 47	2 46	13 47	386	146	386	146	Do.	Do.	
0 31	3 55	0 31	3 55	100	175	100	175	Do.	Do.	
41 07	46 98	41 07	46 98	19 99	22 05	19 99	22 05	Do.	Do.	
0 07	0 31	0 07	0 31	114 28	170 97	114 28	170 97	Do.	Do.	
0 46	5 73	0 46	5 73	19 57	66 49	19 57	66 49	Do.	Do.	
3 84	3 27	3 84	3 27	371 61	310 70	371 61	310 70	Do.	Do.	
42 75	55 11	42 75	55 11	110	94	110	94	Do.	Do.	
1 57	6 70	1 57	6 70	64	69	64	69	Do.	Do.	
1 44	3 2	1 44	3 2	188	313	188	313	Do.	Do.	
16	25	16	25	30	134	30	134	Do.	Do.	

STATEMENT

No.	Name of work.	Area irrigated.					Double cropped.	
		Kharif.	Rabi.	Total.	Flow.	Lift.	Area irrigated.	Percentage of total area.
1	2	3	4	5	6	7	8	9
	WORKS FOR WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT— <i>concl'd.</i>	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	
	UNPRODUCTIVE— <i>concl'd.</i>							
	Central Circle— <i>cont'd.</i>							
35	Chikhli Canal	{ (126) 142	(91) 95	(217) 237	234	3	..	..
36	Maini Tank	{ (191) 211	(1,420) 1,440	(1,611) 1,651	1,596	55	58	3
	Southern Circle.							
37	Gokak Canal, First Section and Storage Works.	5,067	1,103	6,170	5,905	175	..	..
38	Muchkundi Tank	12	..	12	12	..	..	..
39	Dambal Tank	{ *143	64	*143	*143	..	..	..
40	Medleri Tank	29	4	33	32	1	..	..
41	Madag Tank	213	215	428	428	..	..	..
42	Asundi Tank	55 { 172 *190	227 *190	218 *190	..	9	..	..
43	Dharma Canal	{ 448 *5,227	..	448 *5,227	448 *5,227	..	..	..
	Total, Unproductive ..	{ 131,521 *6,515	70,063 *314	201,584 *6,829	205,784	2,629	15,902	5.75
	Grand Total ..	{ 132,529 *7,472	72,171 *875	204,700 *8,347	210,354	2,693	15,902	5.63

Note.—The bold figures in brackets represent areas actually irrigated during the respective seasons and the duties have crops are irrigated. To obtain correct duties therefore these crops have to be added to the rabi areas.

(b) The difference between the discharges "At head" and "utilized" is due to canal water having been let into

(c) Low duties on the Nira Right Bank Canal and Mhaswad Tank are due to scattered nature of irrigation.

(d) No discharge observations were maintained during the year.

(e) The duties on the Godavari and Pravara canals are low, due to high proportion of perennial crops and also to

(f) Figures of "utilized" discharge are not available as the quantity let into the Matoba tank could not be accurately Cantonment.

(g) The low duties are due to high proportion of sugarcane and other perennial crops to the seasonal crops.

(h) There is generally no supply in the Kasurdi, Shirsuphal, Matoba, Bhadalwadi and Pursul tanks in the hot and other causes. The actual number of days on which the channels were in flow has therefore been taken

(i) The high duties on the Bhatodi tank are due to concentrated irrigation and sufficient rainfall.

(j) The low duties on the Kadwa canals and the Girma Left Bank Canal are due to the scattered nature of

* Area under consolidated assessment.

† 119 cusecs were supplied to Khari Cut Canal through Bhojwa channel and Bokh feeder for irrigation.

‡ 16,112 ccs were taken to replenish Bokh reservoir.

I-E--concl'd.

Average discharges, cubic feet per second.				Area irrigated per cubic foot per second.				Base to which the duties of water are calculated.	
At Head.		Utilized.		Discharged at Head.		Utilized.		Kharif.	Rabi
Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.		
10	11	12	13	14	15	16	17	18	19
				Acres.	Acres.	Acres.	Acres.		
(d) ..	..	..	..	(d) ..	..	..	..	15th February to 14th October.	15th October to 14th February.
1'04	5'6	1'04	5'6	211	271	211	271	Do.	Do.
54'32	43'03	54'32	43'03	85'53	72'64	85'53	72'64	Do.	Do.
..	..	..	..	..	..	..	..	Do.	Do.
0'41	1'61	0'41	1'61	348'79	39'75	348'79	39'75	16th January to 15th October.	16th October to 15th January.
1'05	1'29	1'05	1'29	27'62	3'10	27'62	3'10	Do.	Do.
9'86	1'54	9'86	1'54	21'60	139'61	21'60	139'61	Do.	Do.
2'39	4'33	2'39	4'33	23'01	83'60	23'01	83'60	Do.	Do.
69'57	20'08	69'57	20'08	81'43	..	81'43	..	Do.	Do.
..	..	..	..	..	..	..	..		
..	..	..	..	..	..	..	..		

been calculated on these figures. In the rabi season in addition to pure rabi crops perennial and eight months' Shetphal tank.

scattered irrigation and weed trouble which cause heavy losses in transit. measured, besides a large quantity of water was supplied for drinking and domestic purposes to the Poona City and

weather season. Even during the monsoon and rabi seasons the channels are closed for days together due to rainfall for purposes of calculating average discharge and duties.

irrigation and the timely and sufficient rainfall.

STATEMENT I-F.

Statement showing water-rates per acre in force during 1933-34 on
Irrigation Works in the Bombay Presidency excluding Sind.

No.	Name of Work.	WATER-RATES.							Single watering.	Occupier's rate.	Owner's rate.	Water advantage.
		Irrigation in blocks.	Perennial.	Two Seasonal.	Monsoon. four months.	Rabi, four months.	Hot weather.	Miscellaneous.				
	Works for which Capital and Revenue Accounts are kept.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.			
PRODUCTIVE.												
<i>Southern Circle.</i>												
1	Gadikeri Tank *	..	..	..	..	..	..	..	..			
2	Mavinkop Tank *	..	..	..	..	..	..	..	..			
<i>Central Circle.</i>												
3	Ekrak Tank a ¹³	..	..	{ A 35 B 17½	8	3	5	7	..	{ 1 (b ⁶) }	Nil.	Nil.
4	Shahada Channel a	..	..	a ¹⁴	7½	2½	5	7½	..	1½ **2½	Nil.	Nil.
UNPRODUCTIVE.												
<i>Northern Circle.</i>												
5	{ Hathmati Canal a ¹ .. Khari Cut Canal a ¹ ..	..	(b ¹)	..	D 3 E 1	3	6	..	2			
6	Wangroli Tank a ³ ..	..	(b ¹)	6½	D 5 E 2½	4	6	..	{ **2 1½			
7	Savli Tank a ⁴ ..	..	(b ¹)	8	D 5 E 4	4	6	..	1½			
8	Saiat Tank a ⁵ ...	..	(b ¹)	6½	D 4 E 2½	4	6	..	1½			
9	Tranza Nagrama Tanks, a ³	..	(b ¹)	6	D 4 E 2	4	6	..	1			
10	Futelao Tank a ⁶ ..	..	(b ¹)	..	{ D 4 E 2	a ² 3 a ² 2	(b ⁷) 8	..	a ⁹ 1	Nil.	Nil.	Nil.
<i>Deccan Irrigation Circle.</i>												
11	{ Nira Left Bank Canal. Shetphal Tank (b) ..	{ \$19 16	{ M 45 C 66 B 22½ K 15	Light 8 Med. 12	Light 3 Med. 4½	Light 5 Med. 7½	Light 7 Med. 10½		(e) 2			
12	Nira Right Bank Canal (b).	\$19 16	{ M 45 C 66 B 22½ K 15	Light 8 Med. 12	Light 3 Med. 4½	Light 5 Med. 7½	Light 7 Med. 10½		(e) 2			
13	Mhaswad Tank (d) ..	..	X	8	3	5	6	..	(e) 2			

STATEMENT I-F—*contd.*

No.	Name of Work	WATER-RATES.							Single watering.	Occupier's rate.	Owner's rate.	Water advantage.
		Irrigation in blocks.	Perennial.	Two Seasonal.	Monsoon, four months.	Rabi, four months.	Hot weather.	Miscellaneous.				
	Works for which Capital and Revenue Accounts are kept—<i>contd.</i>	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.			
	UNPRODUCTIVE— <i>contd.</i>											
	Deccan Irrigation Circle— <i>contd.</i>											
14	Mutha Canals and Matoba Tank (c)—Sugarcane under the Mutha Canals within the Poona City and Suburban Municipal and Cantonment limits or within one mile of those limits.	..	50		Light 8 Med. 12	Light 3 Med. 4½	Light 5 Med. 7½	Light 7 Med. 10½	..	(e) 2		
	On all remaining land commanded by both the canals.	..	M 45								Nil.	
	Pan gardens ..	..	C 66								Nil.	
	Perennial crops other than sugarcane and pan gardens.	..	B 22½								Nil.	
	Pomegranates ..	..	15									
15	Matoba Tank ..	..	(g)									
	Kasurdi Tank (d) ..	..										
16	Shirsuphal Tank (d) ..	..	X	8	3	5	6	..	(e) 2	Nil.	Nil.	Nil.
17	Bhadalvadi Tank (d) ..	..										
18	{ Godavari Right Bank Canal (b).	{	M 45 C 66	Light 8 Med. 12	Light 3 Med. 4½	Light 5 Med. 7½	Light 7 Med. 10½	..	(c) 2			
	{ Godavari Left Bank Canal (b).	{	B 22½ K 15									
19	Chankapur Tank—Girna Left Bank Canal (d).	..	X	8	3	5	6	..	(e) 2			

STATEMENT I-F—*contd.*

No.	Name of Work.	WATER-RATES.							Single watering.	Occupier's rate.	Owner's rate.	Water advantage.
		Irrigation in blocks.	Perennial.	Two Seasonal.	Monsoon, four months.	Rabi, four months.	Hot weather.	Miscellaneous.				
	Works for which Capital and Revenue Accounts are kept— <i>contd.</i>	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.			
	UNPRODUCTIVE— <i>contd.</i>											
	Deccan Irrigation Circle— <i>concl.</i>											
20	Kadwa River Works (d)—											
	Waghad Tank	..	X	8	3	5	6	..	(e) 2	Nil.	Nil.	Nil.
	Palkhed Canal	..										
	Ujhar-Tambat Canal ..	..										
	Wadali Canal	..										
21	Parul Tank (d)	..										
22	Pravara Canals (b) ..	§19 ¶16	{ M 45 C 66 B 22½ K 15	{ Light 8 Med. 12	{ Light 3 Med. 4½	{ Light 5 Med. 7½	{ Light 7 Med. 10½	{ ..	(e) 2			
23	Bhatodi Tank (d)	..	X	8	3	5	6	..	(e) 2			
	Central Circle.											
24	Koregaon Tank a ¹² ..	..	A 32 B 16	7	3	4	6	..	(b ⁵) 1			
25	Ashti Tank a ¹²	..	A 32 B 16	7	3	4	6	..	(b ⁵) 1			
26	Pathri Tank a ¹²	..	A 32 B 16	7	3	4	6	..	(b ⁵) 1			
27	Jamda Canals a ¹²	..	B 10 A 16	5 a ¹⁷ 8	2	3	5	..	a ¹⁴ 1			
28	Hartala Tank a ¹²	..	B 9 A 12	5 a ¹⁷ 7	2	3	4	..	{ 1 a ¹⁴ 1			
29	Mhasva Tank a ¹²	..	B 9 A 12	5 a ¹⁷ 7	2	3	4	..				
30	Lower Panjhra River Works. a ¹²	..	A 30 B 15	8	3	5	7	..		(b ⁵) 1½		
31	Krishna Canal a ¹²	..	A 32 B 16	8	3	5	8	..	a ¹⁴ 1			
32	Revani Canal a ¹²	..	A 24 B 12	6	2	4	6	..	a ¹⁴ 1			
33	Upper Man River Works. a ¹²	..	A 24 B 12	6	2	4	6	..	a ¹⁴ 1	Nil.	Nil.	Nil.
34	Yerla River Irrigation Works. a ¹²	..	A 26 B 13	6½	2	4½	6½	..	a ¹⁴ 1			
35	Chikhli Canal a ¹²	..	A 24 B 12	6	2	4	6	..	a ¹⁴ 1			
36	Maini Tank a ¹²	..	A 24 B 12	6	2	4	6	..	a ¹⁴ 1			

STATEMENT I-F—concl'd.

No.	Name of Work.	WATER-RATES.								Occupier's rate.	Owner's rate.	Water advantage.
		Irrigation in blocks.	Perennial.	Two Seasonal.	Monsoon, four months.	Rabi, four months.	Hot weather.	Miscellaneous.	Single watering.			
	Works for which Capital and Revenue Accounts are kept —concl'd.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.			
	UNPRODUCTIVE —concl'd.											
	Southern Circle.											
37	Gokak Canal, 1st Section and Storage Works. (u)	..	(b ¹) 27½ (b ²) 20	8	3	5	15	..	2	Nil.	Nil.	Nil.
38	Muchkundi Tank (a)..	..	(b ¹) 10 (b ²) 5	..	2	2	5	..	1			
39	Dambal Tank (w)	..	(x) 14	(y) 6 (z) 7½	(m) 4	(n) 4½	(l) 7	..	(j) 1 (k) 2			
40	Medleri Tank (w)	..	(x) 14	(y) 6 (z) 7½	(m) 4	(n) 4½	(l) 7	..	(j) 1 (k) 2			
41	Madag Tank (w)	..	(x) 12	(y) 6 (z) 7½	(m) 4	(n) 4½	(l) 7	..	(j) 1 (k) 2			
42	Asundi Tank (w)	..	(x) 14	(y) 6 (z) 7½	(m) 4	(n) 4½	(l) 7	..	(j) 1 (k) 2			
43	Dharma Canal (a ¹⁰)..	..	..	..	4½	..	..	..	(j) 1 (k) 2			

NOTE.—(1) For lift irrigation in the Deccan Irrigation Circle the orders contained in G. R. No. 4771/27, dated 23rd December 1931, are that lift from Budkie should not be allowed at all in areas under the flow command of a canal and that in other areas it may be allowed only when the supply of water for irrigation is in excess of the demand at half the flow rates for all crops other than sugarcane for which full rate should be charged.

(2) For lift irrigation half the ordinary rates are charged in other circles.

(3) Double or treble the ordinary rates are charged as penal rates for taking water without permission.

(4) Leakage or percolation rates are the same as ordinary rates.

(5) Water-rates for non-irrigational purposes are charged at the rates sanctioned by Government in each case subject to the minimum rates fixed in G. R. No. 851, dated the 7th April 1924.

(6) In the D. I. C. monsoon or two seasonal crops which take pre-monsoon waterings between the 25th April and the break of the monsoon are charged the following water rates per acre according to the date of first watering applied for and sanctioned, vide G. R. No. 5602/27, dated 9th December 1931:—

From the date	Rate for light type of crops.		Rate for medium type of crops.	
	Rs.		Rs.	
25th April	..	..	5	7½
5th May	..	..	4	6
15th May	..	..	3	4½

(7) A reserve rate of Rs. 3 per acre as a minimum rate has been sanctioned for lands let out for cultivation in the basin of Lake Beale—vide G. R. No. 2484, dated 12th June 1925.

(8) A flat rate of Rs. 2-8-0 per acre of culturable area has been sanctioned up to 14th February 1934 for the supply of water from the irrigation channel of Sangur village to the irrigators who have not suffered in any way from land acquisition for the Lloyd Dam—vide G. R. No. 1849/27, dated 5th January 1932.

* Lands wholly assessed at consolidated rates.

§ Block rate for blocks in 1:3 proportion of sugarcane.

¶ Block rate for blocks in 1:4 proportion of sugarcane.

** For single waterings crops for which no application for irrigation throughout the season was previously submitted.

A—For sugarcane and pan gardens.

B—For perennial crops other than sugarcane.

C—For pan gardens for the whole year. If water is given for part of the year the charge will be on the basis

of thrice the medium seasonal rates for the seasons concerned—vide G. R. No. 5602/27, dated 9th December 1931.

D—For rice.

E—For monsoon crops other than rice.

K—For pomegranates.

M—For Sugarcane.

X—For sugarcane and pan gardens double the seasonal rates and for other perennial crops single seasonal rates shall be charged.

(b) The rate for sugarcane and block rates sanctioned in G. R. No. 5602/27, dated 28th November 1932. The rates for crops other than sugarcane are to be in force from 15th February 1931 to 14th February 1934—*vide* G. R. No. 5602/27, dated 9th December 1931. The same rates have been continued up to 14th February 1936—*vide* G. R. No. 5602/27, dated 23rd September 1933.

(c) Rates for sugarcane within the Poona City and Suburban Municipal and cantonment limits or within one mile of those limits and for sugarcane in other areas to be in force up to 14th February 1936—*vide* G. R. Nos. 5602/27, dated 9th December 1931, dated 28th November 1932 and 23rd September 1933. The rates for crops other than sugarcane to be in force up to 14th February 1936—*vide* G. R. Nos. 5602/27, dated 9th December 1931, 28th November 1932 and 23rd September 1933.

(d) Rates sanctioned in G. R. No. 5602/27 dated 9th December 1931, as amended by corrigendum No. 5602/27, dated 15th February 1933, to be in force with effect from 15th February 1931 to 14th February 1934. The same rates have been continued up to 14th February 1936—*vide* G. R. No. 5602/27, dated 23rd September 1933.

(e) The single-watering rate applies to one pre-seasonal or post-seasonal watering to a sanctioned crop. If more than one such watering is taken, the full seasonal rate will be charged unless specifically ordered otherwise. The single watering rate is not applicable to seasonal irrigation.

(g) For sugarcane the short-term cane rates as per scale sanctioned in G. R. No. 8670, dated 13th January 1927 (which may be in force on major irrigation works), for pan gardens the same rate as on the Mutha Canals and for other perennials single medium seasonal rates will be charged—*vide* G. R. No. 5602/27, dated 9th December 1931.

(i) From 15th June to 15th October.

(k) From 16th October to 14th June.

(l) From 15th February to 15th June.

(m) From 15th June to 15th October or 15th July to 30th November.

(n) From 15th October to 15th February.

(s) In force up to 15th February 1937—*vide* G. R. No. 5459/27, dated 13th May 1931.

(u) In force up to 14th February 1936—*vide* G. R. Nos. 466/27, dated 3rd March 1932 and 22nd January 1934.

(w) Rates sanctioned for the period of five years ending 31st March 1935—*vide* G. R. No. 6095, dated 22nd October 1924 and G. R. No. 3187/27, dated 22nd August 1929.

(z) For sugarcane, betel leaves, etc., for 12 months.

(y) For eight months from 15th June to 15th February.

(z) For eight months from 15th October to 15th June or 1st August to 31st March.

^a Rates sanctioned in G. R. Nos. 836, dated 8th October 1923, 836, dated 23rd April 1924, 836, dated 29th July 1924, and 1590/27, dated 19th June 1928, are to be in force up to 14th February 1934. From 15th February 1934, the water rates sanctioned in G. R. No. 5602/27, dated 15th February 1933, shall come into force.

^{a1} Rates sanctioned in G. R. No. 4855, dated 23rd December 1927, are to be in force up to 14th February 1937—*vide* G. R. No. 5956/27, dated 22nd October 1931.

^{a2} Rates sanctioned in G. R. Nos. 825, dated 30th August 1924, and 825, dated 1st November 1926, are to be in force up to 15th June 1935—*vide* G. R. No. 2881/27, dated 4th July 1929.

^{a3} Rates to be in force up to 31st July 1938—*vide* G. R. No. 679/27, dated 11th October 1932.

^{a4} Rates sanctioned in G. R. Nos. A-1-1335, dated 14th June 1910, 815, dated 18th February 1925, and 815, dated 13th November 1926, are to be in force up to 15th June 1935—*vide* G. R. No. 2894/27, dated 19th June 1929.

^{a5} Rates sanctioned in G. R. Nos. A-1-309, dated 15th February 1911, 5412, dated 15th December 1926, and 2055/27, dated 4th October 1929, are to be in force up to 15th June 1935.

^{a6} Rates sanctioned in G. O. No. A-1-9945, dated 12th October 1917, are to be in force up to 31st March 1935—*vide* G. R. No. 2691/27, dated 29th April 1929.

^{a7} For ordinary rabi.

^{a8} For restorative crops grown after rice.

^{a9} In either kharif or rabi season.

^{a10} Rates sanctioned in G. R. No. 293/27 of 9th August 1927 are to be in force up to 31st March 1937—*vide* G. R. No. 293/27, dated 14th February 1931.

^{a11} Rates sanctioned in G. R. No. 7736, dated 30th October 1925, are to be in force up to 14th February 1934—*vide* G. R. No. 5602/27, dated 15th February 1933. From 15th February 1934, the water rates sanctioned in G. R. No. 5602/27, dated 15th February 1933, shall come into force.

^{a12} Rates in force up to 15th February 1934—*vide* G. P. Nos. 6529, dated 17th January 1925, and 1912/27, dated 27th July 1928 and 9th June 1930. With effect from 15th February 1934, the water rates sanctioned in G. R. No. 5602/27, dated 15th February 1933, shall come into force.

^{a14} For sugarcane and pan gardens double the ordinary rates are charged.

^{a16} In force up to 15th February 1934—*vide* G. O. No. A-1-16033, dated 8th December 1919, G. R. No. 3151/27, dated 3rd January 1930, and G. R. No. 5602/27, dated 15th February 1933. From 15th February 1934, the water rates sanctioned in G. R. No. 5602/27, dated 15th February 1933, shall come into force.

^{a16} Rates in force till 14th February 1934—*vide* G. R. No. 5602/27, dated 15th February 1933. From 15th February 1934, the water rates sanctioned in G. R. No. 5602/27, dated 15th February 1933, shall come into force.

^{a17} Water rate for late eight months, *i.e.*, from 15th October to 14th June.

(b) Rate for perennial 12 months.

(b1) Rate for perennial 8 months.

(b1) Single seasonal rates are charged—*vide* G. R. No. 3343/27, dated 8th October 1929.

(b2) For sugarcane the single-watering rate is Rs. 2—*vide* G. M. No. 6275/27-I.B., dated 23rd February 1932.

(b7) Rates to be in force up to 14th February 1934. With effect from 15th February 1934, the rate shall be Rs. 2—*vide* G. R. No. 717/27, dated 15th February 1934.

Administration Report of Irrigation
Works in the Deccan and Gujarat
for 1933-34 : Review of —.

GOVERNMENT OF BOMBAY.

PUBLIC WORKS DEPARTMENT.

Resolution No. P. 22/8462.

Bombay Castle, 3rd July 1935.

RESOLUTION OF GOVERNMENT.

The irrigation works dealt with in this Report which covers the period 1st April 1933 to 31st March 1934 fall under two categories, viz. (i) tanks and canals for which capital and revenue accounts are kept, and (ii) small tanks, bandharas and drainage channels, for which neither capital nor revenue accounts are kept. The works included under (i) are described in detail in Section I of the Report. The works mentioned under (ii) are small and numerous and a brief account of them is given in Section II of the Report.

2. The total capital outlay on works for which capital and revenue accounts are kept, up to the end of the year under review, amounted to Rs. 10,62,81,623.

Including an area of 8,347 acres, on which a consolidated water and land assessment is levied, the total area irrigated was 213,047 acres, as compared with 194,438 acres in the previous year.

The gross assessed revenue amounted to Rs. 24,04,530 compared with Rs. 24,42,470 during the previous year and Rs. 25,44,082, the average of the past three years.

The unrealised balance of revenue demands at the close of the year amounted to Rs. 22,38,027. A portion of this amount has since been recovered and steps have been taken to effect the early recovery of the balance outstanding.

The working expenses amounted to Rs. 15,14,400 compared with Rs. 15,77,914 in the previous year.

The net revenue (after deducting working expenses) amounted to—

	Rs.
(i) On the basis of assessment	8,90,130
(ii) On the basis of realisations	10,31,179

as compared with Rs. 8,64,556 and Rs. 10,83,699, respectively, during the previous year.

The statement embodied in paragraph 13 of the Report shows the financial results of the more important works for which capital and revenue accounts are kept.

3. The total area irrigated by works for which neither capital nor revenue accounts are kept was 172,655 acres, and the gross revenue obtained was Rs. 7,95,038. The total expenditure incurred on improvements and repairs to these works amounted to Rs. 4,06,030.

By order of the Governor in Council,

J. R. PHILLIPS,

Deputy Secretary to Government,
Irrigation and Railways.

To

The Finance Department.
The Revenue Department.
The Commissioner in Sind.
The Commissioner, Northern Division.
The Commissioner, Central Division.
The Commissioner, Southern Division.
The Senior Superintendent of Land Records, Southern Circle.
The Director of Agriculture.
The Commissioner of Labour and Director of Information.
The Chief Engineer in Sind.
All Superintending Engineers of Circles.
All Collectors in the Presidency proper (except those of Bombay, Thana, Kolaba and Bombay Suburban District).
The Accountant General, Bombay.
The Audit Officer, Lloyd Barrage and Canals Construction.
All Executive Engineers in charge of Irrigation Works in the Deccan and Gujarat.
The Secretary to the High Commissioner for India (by letter).

